

WADE-8044 Series

Mini-ITX Board

User's Manual

Version 1.0

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Appendix A

Appendix B

How to Use This Manual

The manual describes how to configure your WADE-8044 system board to meet various operating requirements. It is divided into five chapters, with each chapter addressing a basic concept and operation of Single Host Board.

Chapter 1: System Overview. Presents what you have in the box and give you an overview of the product specifications and basic system architecture for this series model of single host board.

Chapter 2: Hardware Configuration. Show the definitions and locations of Jumpers and Connectors that you can easily configure your system.

Chapter 3: System Installation. Describes how to properly mount the CPU, main memory and Compact Flash to get a safe installation and provides a programming guide of Watch Dog Timer function.

Chapter 4: BIOS Setup Information. Specifies the meaning of each setup parameters, how to get advanced BIOS performance and update new BIOS. In addition, POST checkpoint list will give users some guidelines of trouble-shooting.

Chapter 5: Troubleshooting. Provide various of useful tips to quickly get WADE-8044 running with success. As basic hardware installation has been addressed in Chapter 3, this chapter will basically focus on system integration issues, in terms of backplane setup, BIOS setting, and OS diagnostics.

The content of this manual is subject to change without prior notice. These changes will be incorporated in new editions of the document. The vendor may make supplement or change in the products described in this document at any time.

Chapter 1

System Overview

1.1 Introduction

WADE-8044 is a cost-effective Mini-ITX embedded board which takes the advantages of Intel® Pentium® M/Celeron® M processor and Intel® 910GMLE/ICH6-M chipset for the applications those need low power consumption or FANLESS solution. With various display interfaces, multiple legacy I/O and dual Ethernet, WADE-8044 is capable to provide the most essential functions for the applications such as Lottery, Gaming, POS, Medical and Digital Signage.

WADE-8044 can run with Intel Socket 479 Pentium® M / Celeron® M processors and support two 240-pin DIMM sockets up to 2GB DDR2 Memory. The onboard SATA and IDE controllers can support 2 SATA devices with data transfer rates up to 150MB/s and 2 IDE devices with Ultra ATA33/66/100 synchronous mode feature. The onboard Super I/O chip supports four serial ports; one is RS232/422/485 selectable and three are in RS232 data format. Besides, it can also support dual display function by VGA, LVDS or DVI interfaces.

WADE-8044 can support up to two PCI add-on card via riser card. One 6-pin Mini-DIN connectors are provided to connect PS/2 keyboard and mouse. The onboard Flash ROM is used to make the BIOS update easier. One 20-pin standard connector is designed to support ATX power function. All of these features make WADE-8044 series excellent in stand-alone applications.

1.2 Check List

The WADE-8044 package should cover the following basic items

- ✓ One WADE-8044 Mini ITX Board
- ✓ One SATA cable
- ✓ One I/O Shield
- ✓ One Installation Resources CD-Title

If any of these items is damaged or missing, please contact your vendor and keep all packing materials for future replacement and maintenance.

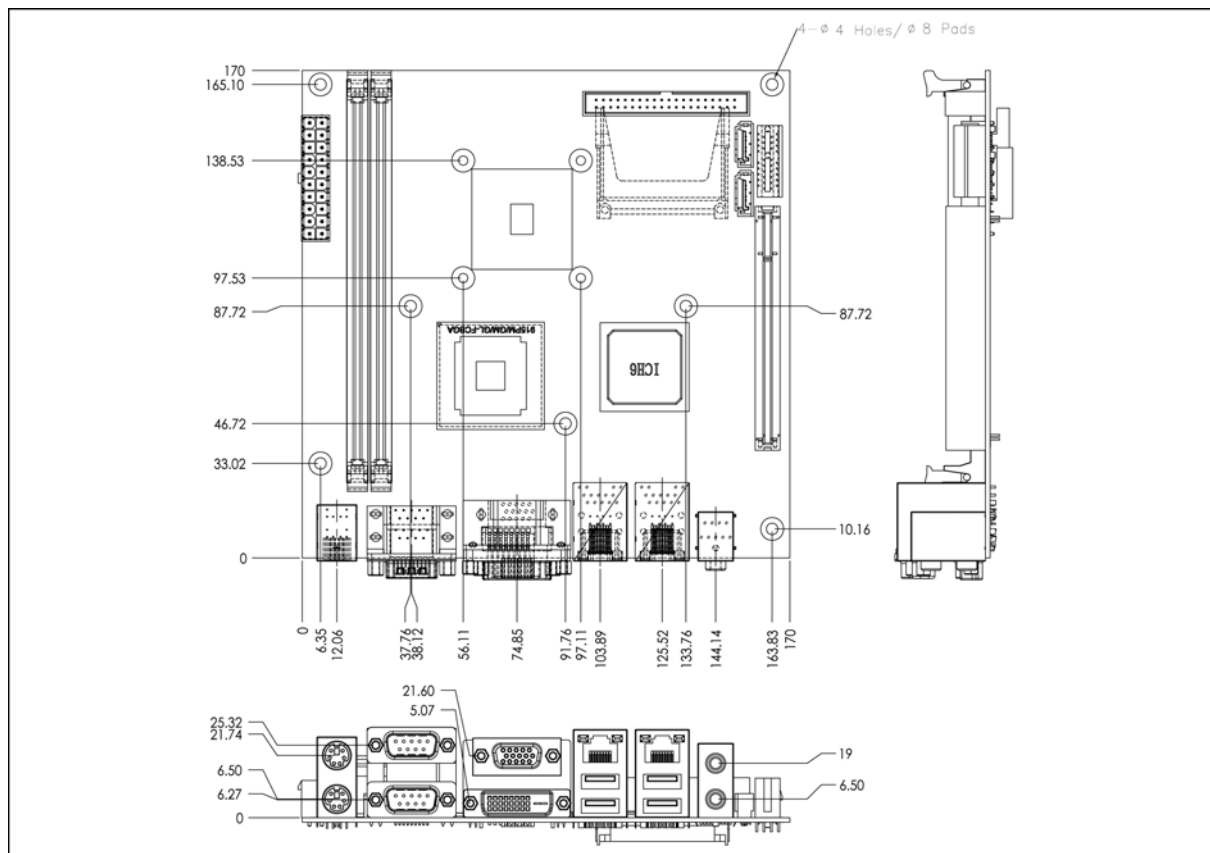
1.3 Product Specification

- **CPU**
 - Support Intel Pentium® M / Celeron® M processor
 - CPU bus clock: 400 MHz
- **Chipset Intel® 910GMLE GMCH and ICH6-M Main Memory**
 - Two 240-pin DIMM socket
 - Support dual channel memory DDR2 400MHz up to 2GB
- **System BIOS**
 - AWARD BIOS
- **Super I/O Winbond W83627DHG-E and Fintek F81216DG**
 - Serial Port: Support Four serial ports, one is RS232/422/485 selectable and three are in RS232 data format
 - Parallel Port: Support one internal LPT pin header
- **Storage**
 - One IDE 40-pin connector, UDMA 66/100
 - Two SATA connectors, data transfer rates up to 150MB/s
- **SSD**
 - 1 x CompactFlash® Type I/II socket, support UDMA
- **USB**
 - Support eight USB 2.0 ports (four external, four internal)
- **Keyboard and PS/2 Mouse Interfaces**
 - Support two mini-DIN 6-pin connectors for PS/2 Keyboard and Mouse
- **Auxiliary I/O**
 - One 2-pin system reset switch
 - One 2-pin system power on LED
 - One 2-pin HDD active indicator interface
 - One 20-pin ATX power control interface
 - Two 3-pin headers for CPU and system fan
- **Real-Time Clock/Calendar (RTC)**
 - Build-in ICH6-M
 - Y2K compliant
- **System Monitoring and Protection**
 - Monitoring system temperature, voltage, and cooling fan status
- **Wake On LAN**
 - Support system wake up function from Network
- **On-chip VGA Display**
 - Intel® 910GMLE GMCH integrated GMA 900 Graphics Controller
 - One DSUB-15 connector for CRT display interface
 - One LVDS connector for 18-bit LVDS panel display interface

- One DVI-D connector for DVI display interface
- One LVDS connector for 24-bit LVDS panel display interface (Optional)
- CRT: Support maximum resolution up to 2048 x 1536
- 18-bit LVDS: Support maximum resolution up to 1400 x 1050
- DVI: Support maximum resolution up to 1600 x 1200
- 24-bit LVDS: Support maximum resolution up to 1600 x 1200 (Optional)
- **On-board Ethernet Function**
 - Support dual Gigabit Ethernet by Realtek RTL8111 Ethernet controller which is IEEE 802.3 10/100/1000BASE-T compliant
 - Support two LED indicators to display active and link message
- **PCI Interfaces**

Support up to two PCI slots via riser card
- **Physical and Environmental Requirements :**
 - Outline Dimension (L x W) : 170mm (6.69 inch) X 170mm (6.69 inch)
 - Power Requirements: +5V@1.3A (System), +12V@0.3A(CPU),
+3.3V@0.7A(System)
 - Operating Temperature: 0 ~ 55 °C
 - Storage Temperature: -20~70°C
 - Relative Humidity: 5% to 95%, non-condensing

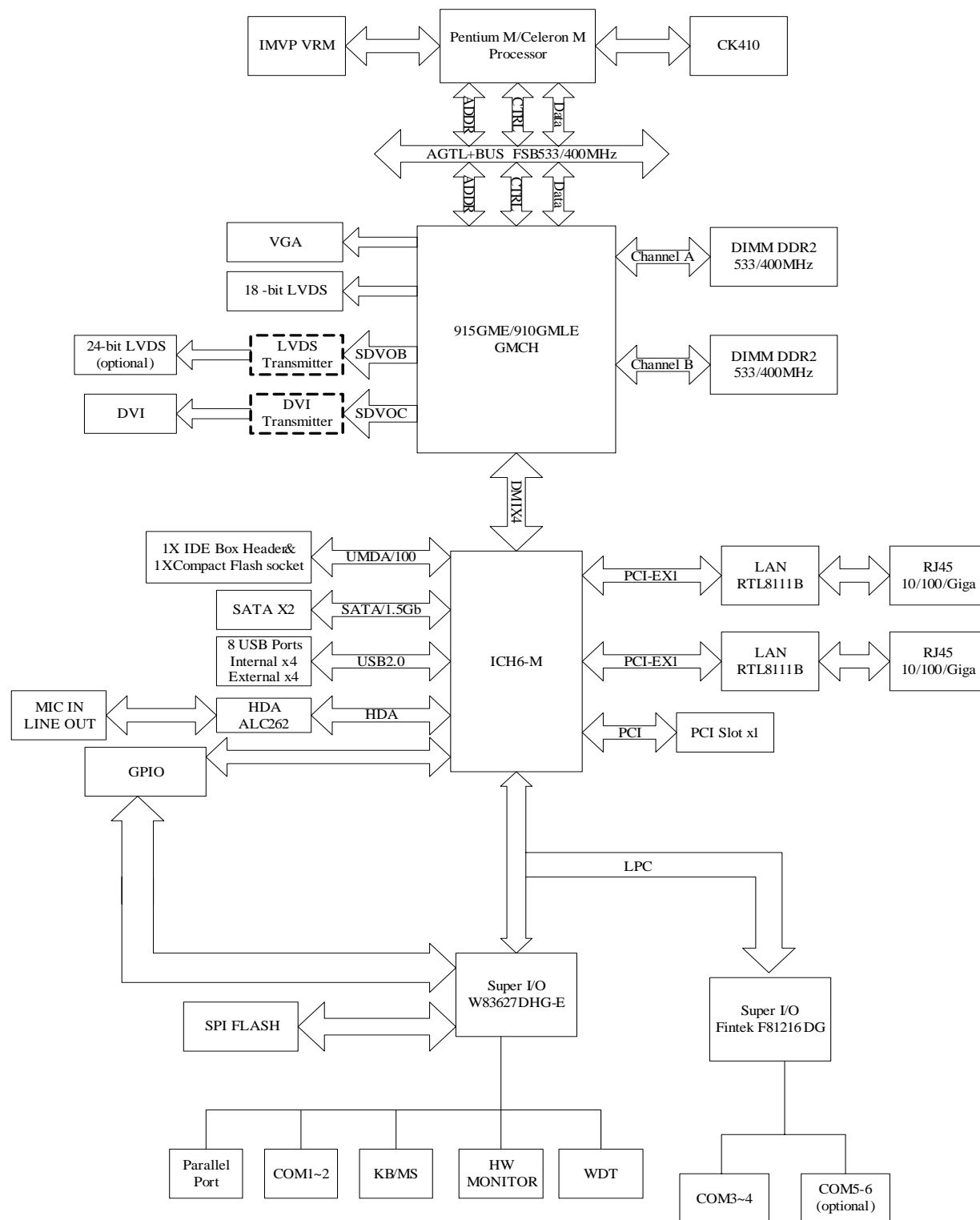
1.3.1 Mechanical Drawing



WADE-8044 Mechanical Drawing

1.4 System Architecture

All of details operating relations are shown in WADE-8044 System Block Diagram.



WADE-8044 System Block Diagram

Chapter 2

Hardware Configuration

This chapter indicates jumpers', headers' and connectors' locations. Users may find useful information related to hardware settings in this chapter. The default settings are indicated with a star sign (★).

2.1 Jumper Setting

In the following sections, **Short** means covering a jumper cap over jumper pins; **Open** or **N/C** (Not Connected) means removing a jumper cap from jumper pins. Users can refer to Figure 2-1 for the Jumper allocations.

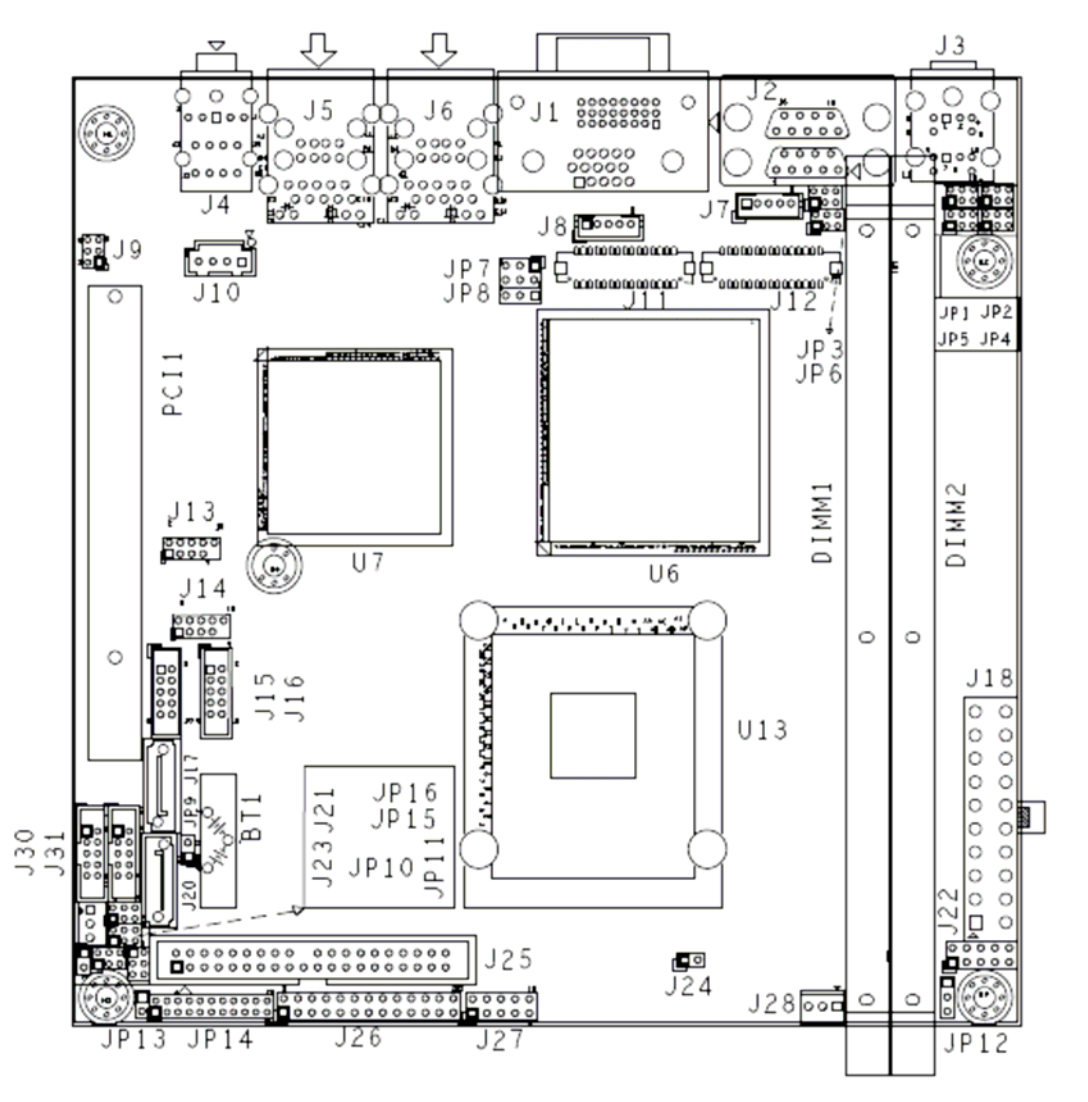


Figure 2-1 WADE-8044 Jumper and Connector Locations

The jumper settings are listed as follows:

JP1 : 24-bit LVDS Backlight Enable Select (Optional)

JP1	Function
1-3 , 2-4 Short	+5V(HIGH) ★
1-3 , 4-6 Short	+12V(HIGH)
3-5 , 2-4 Short	+5V(LOW)
3-5 , 4-6 Short	+12V(LOW)

JP2 : 24-bit LVDS VDD Select (Optional)

JP2	Function
2-4 Short	+3.3V ★
4-6 Short	+5V
3-4 Short	+12V

JP3/JP6/JP10/JP11 :COM PORT RI,5V,12V Select

JP3/JP6/JP10/JP11	Function
3-4	RI (Ring Indicator) ★
1-2	5V
5-6	12V

JP4 : 18-bit LVDS VDD Select

JP4	Function
2-4 Short	+3.3V ★
4-6 Short	+5V
3-4 Short	+12V

JP5 : 18-bit LVDS Backlight Enable Select

JP5	Function
1-3 , 2-4 Short	+5V(HIGH) ★
1-3 , 4-6 Short	+12V(HIGH)
3-5 , 2-4 Short	+5V(LOW)
3-5 , 4-6 Short	+12V(LOW)

JP8 : Banias or Dothan voltage adjust

Signal Description
1-2 Short +1.8V (BANIAS) ★
2-3 Short +1.5V(DOTHAN)

JP9 : Clear CMOS

Signal Description
OPEN (Normal) ★
SHORT(Clear CMOS)

JP12 : CPU External Frequency Select

Signal Description
1-2 Short 100Mhz ★
2-3 Short 133Mhz

JP14 : COM3 RS232, RS422, RS485 Select

JP14	Function
5-6, 9-11, 10-12, 15-17, 16-18 Short	RS-232 ★
3-4, 7-9, 8-10, 13-15, 14-16, 21-22 Short	RS-422
1-2, 7-9, 8-10, 19-20 Short	RS-485

Notes:

CF UNIT default is “Master”

2.2 Connector Allocation

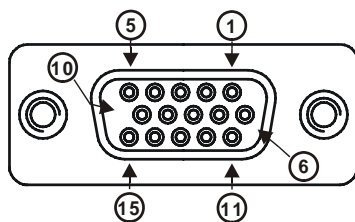
I/O peripheral devices are connected to the interface connectors

Connector Function List

Connector	Description	Remark
J1	VGA/DVI D-SUB Connector	
J2	COM Port Connector	
J3	KB/MS Connector	
J4	Audio Jack 3 in 1 Connector	
J5	RJ45 and USB X 2 Connector	
J6	RJ45 and USB X 2 Connector	
J7	24-bit LVDS Backlight Enable Connector	Optional
J8	18-bit LVDS Backlight Enable Connector	
J9	Audio Pin Header	
J10	CD-IN pin header	
J11	24-bit LVDS Connector	Optional
J12	18-bit LVDS Connector	
J13	USB Pin Header	
J14	USB Pin Header	
J15	COM3 Pin Header	
J16	COM4 Pin Header	
J17	SATA Connector	
J18	ATX Power Connector	
J20	SATA Connector	
J21	System FAN Connector	
J22	Front Panel Pin Header	
J23	Auto Power Button Pin Header	
J24	Case Open Pin Header	
J25	IDE Connector	
J26	Parallel Port Pin Header	
J27	GPIO Pin Header	
J28	CPU FAN Connector	
J29	CF Socket	
J30	COM5 Pin Header	Optional
J31	COM6 Pin Header	Optional

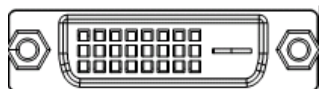
Pin Assignments of Connectors

J1 : On-board VGA Connector



PIN No.	Signal Description
1	Red
2	Green
3	Blue
4	Monitor ID0 (MONID0) (5V I/F)
5	Ground
6	Ground
7	Ground
8	Ground
9	+5V
10	Ground
11	Monitor ID1 (MONID1) (5V I/F)
12	VGA DDC Data (5V I/F)
13	Horizontal Sync. (HSYNC) (5V I/F)
14	Vertical Sync. (VSYNC) (5V I/F)
15	VGA DDC Clock (5V I/F)

DVI Pin Assignment



PIN No.	Signal Description
1	TDC2-
2	TDC2+
3	GND
4	NC
5	NC
6	DDC_CLK
7	DDC_DATA
8	NC
9	TDC1-

10	TDC1+
11	GND
12	NC
13	NC
14	5V
15	GND
16	DVI Detect
17	TDC0-
18	TDC0+
19	GND
20	NC
21	NC
22	GND
23	TLC+
24	TLC-

J2 : COM Port D-SUB Connector

PIN No.	Signal Description
1,10	DCD (Data Carrier Detect)
2,11	RXD (Receive Data)
3,12	TXD (Transmit Data)
4,13	DTR (Data Terminal Ready)
5,14	GND (Ground)
6,15	DSR (Data Set Ready)
7,16	RTS (Request to Send)
8,17	CTS (Clear to Send)
9,18	RI (Ring Indicator) Selectable 5V or 12V and RI

J3 : KB/MS D-SUB Connector

PIN No.	Signal Description
1	Keyboard Data
2	Mouse Data
3	Ground
4	PS2 Power
5	Keyboard Clock
6	Mouse Clock

J4 : Audio Jack Connector

PIN No.	Signal Description	PIN No.	Signal Description
1	Analog Ground	2 、 5	MIC with Reference Voltage
3	Analog Ground	4	NC
22	Line-out Left Channel	23	Analog Ground
24	NC	25	Line-out Right Channel
32	Line-in Left Channel	33	Analog Ground
34	NC	35	Line-in Right Channel

J5/J6 : Ethernet RJ-45&USB D-SUB Connector

RJ-45 Pin Assignment

PIN No.	Signal Description
1	MDI0+ (MDI0P)
2	MDI0- (MDI0N)
3	MDI1+ (MDI1P)
4	MDI2+ (MDI2P)
5	MDI2- (MDI2N)
6	MDI1- (MDI1N)
7	MDI3+ (MDI3P)
8	MDI3- (MDI3N)

USB Pin Assignment

PIN No.	Signal Description
1	VCC
2	USB-
3	USB+
4	GND

J7/J8 : 18-bit and 24-bit LVDS Backlight Connector

PIN No.	Signal Description
1	VCC
2	GND
3	12V
4	GND
5	Backlight Enable.

※24-bit LVDS is optional

J9 : Audio Pin Header

PIN No.	Signal Description	PIN No.	Signal Description
1	Line out-Right	2	Mic-Right
3	Ground	4	Ground
5	Line out-Left	6	Mic-Lift

J10 : CD-in Pin Header

PIN No.	Signal Description
1	CD-in Left Channel
2	CD Ground
3	CD Ground
4	CD-in Right Channel

J11 : 18-bit LVDS Connector.

PIN No.	Signal Description	PIN No.	Signal Description
1	CHA_DATA0	2	CHA_DATA#0
3	CHA_DATA1	4	CHA_DATA#1
5	CHA_DATA2	6	CHA_DATA#2
7	NC	8	NC
9	CHA_CLKP	10	CHA_CLKN
11	CHB_DATA0	12	CHB_DATA#0
13	CHB_DATA1	14	CHB_DATA#1
15	CHB_DATA2	16	CHB_DATA#2
17	NC	18	NC
19	CHB_CLKP	20	CHB_CLKN
21	NC	22	NC
23	GND	24	NC
25	GND	26	GND
27	VDD_POWER	28	VDD_POWER
29	NC	30	VDD_POWER

J12 : 24-bit LVDS Connector (Optional)

PIN No.	Signal Description	PIN No.	Signal Description
1	CHA_DATA0	2	CHA_DATA#0
3	CHA_DATA1	4	CHA_DATA#1
5	CHA_DATA2	6	CHA_DATA#2
7	CHA_DATA3	8	CHA_DATA#3
9	CHA_CLKP	10	CHA_CLKN
11	CHB_DATA0	12	CHB_DATA#0
13	CHB_DATA1	14	CHB_DATA#1
15	CHB_DATA2	16	CHB_DATA#2
17	CHB_DATA3	18	CHB_DATA#3
19	CHB_CLKP	20	CHB_CLKN
21	DDC_DATA	22	DDC_CLK
23	GND	24	NC
25	GND	26	GND
27	VDD_POWER	28	VDD_POWER
29	NC	30	VDD_POWER

J13/J14 : Internal USB Pin Header

PIN No.	Signal Description	PIN No.	Signal Description
1	VCC	2	VCC
3	USB1-	4	USB2-
5	USB1+	6	USB2+
7	GND	8	GND
9	NC	10	GND

J15/J16 /J30/J31 : COM3,COM4 ,COM5,COM6 Pin Header

PIN No.	Signal Description
1	DCD (Data Carrier Detect)
2	RXD (Receive Data)
3	TXD (Transmit Data)
4	DTR (Data Terminal Ready)
5	GND (Ground)
6	DSR (Data Set Ready)
7	RTS (Request to Send)
8	CTS (Clear to Send)
9	RI (Ring Indicator)
10	N/C

※COM5 and COM6 are optional

J17/J20 : SATA Connector

PIN No.	Signal Description
1	Ground
2	SATATX+ (SATATXP)
3	SATATX- (SATATXN)
4	Ground
5	SATARX- (SATARXN)
6	SATARX+ (SATARXP)
7	Ground

J18 : ATX Power Connector

PIN No.	Signal Description	PIN No.	Signal Description
1	+3.3V	11	+3.3V
2	+3.3V	12	-12V
3	GND	13	GND
4	+5V	14	PS_ON#
5	GND	15	GND
6	+5V	16	GND
7	GND	17	GND
8	PWR_OK	18	NC
9	+5VSB	19	+5V
10	+12V1	20	+5V

J21/J28 : FAN Connector

PIN No.	Signal Description
1	Ground
2	+12V
3	Fan Speed Detecting signal

J22 : Front Panel Pin Header

PIN No.	Signal Description	PIN No.	Signal Description
1	Power Button Signal	2	GND
3	Reset Signal	4	GND
5	VCC3	6	HDD LED Signal
7	5VSB	8	Suspend LED Signal
9	GND	10	Power LED

J23 : Auto Power Button

PIN No.	Signal Description
1-2	OPEN (Disable auto power button) ★
1-2	SHORT(Enable auto power button)

J24 : Case Open

PIN No.	Signal Description
1-2	OPEN (Disable case open) ★
1-2	SHORT(Enable case open)

J25 : IDE Connector

PIN No.	Signal Description	PIN No.	Signal Description
1	RESET#	2	GND
3	DATA_7	4	DATA_8
5	DATA_6	6	DATA_9
7	DATA_5	8	DATA_10
9	DATA_4	10	DATA_11
11	DATA_3	12	DATA_12
13	DATA_2	14	DATA_13
15	DATA_1	16	DATA_14
17	DATA_0	18	DATA_15
19	GND	20	NC
21	PDDREQ	22	GND
23	PDIOW#	24	GND
25	PDIOR#	26	GND
27	PDIORDY	28	CSEL
29	PDDACK#	30	GND
31	IRQ14#	32	NC
33	PDA1	34	PDIAG#
35	PDA0	36	PDA2
37	PDCS#1	38	PDCS#3
39	IDEACT#	40	GND

J26 : Parallel Port

PIN No.	Signal Description	PIN No.	Signal Description
1	Strobe#	14	Auto Form Feed#
2	Data 0	15	Error#
3	Data 1	16	Initialization#
4	Data 2	17	Printer Select IN#
5	Data 3	18	Ground
6	Data 4	19	Ground
7	Data 5	20	Ground
8	Data 6	21	Ground
9	Data 7	22	Ground
10	Acknowledge#	23	Ground
11	Busy	24	Ground
12	Paper Empty	25	Ground
13	Printer Select	26	N/C

J27 : General Purpose I/O Connector

PIN No.	Signal Description	PIN No.	Signal Description
1	GPIO0	2	GPIO4
3	GPIO1	4	GPIO5
5	GPIO2	6	GPIO6
7	GPIO3	8	GPIO7
9	Ground	10	+5V

Chapter 3

System Installation

This chapter provides you with instructions to set up your system. The additional information is enclosed to help you set up onboard PCI device and handle Watch Dog Timer (WDT) and operation of GPIO in software programming.

3.1 Intel® Pentium M/Celeron M Processor

Installing Socket 479 CPU on actuator (for PGA Processor Type)

Making sure to loosen the latch of actuator at correctly position (Open), and then configure CPU more gently, don't be forcible push to do it.

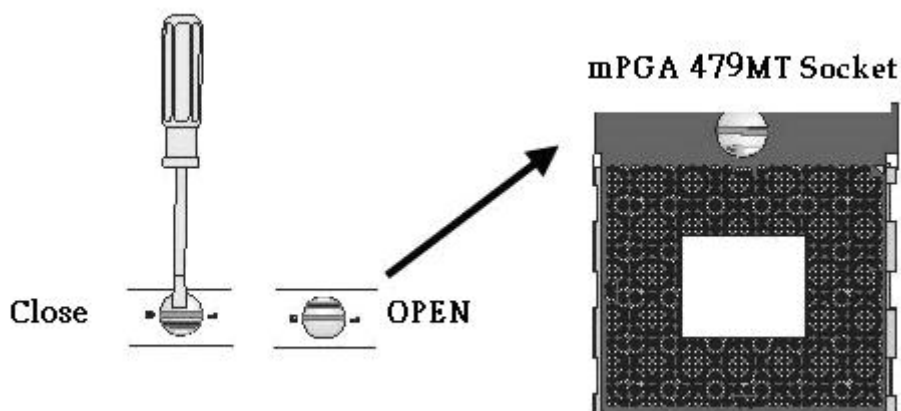


Figure 3-1

Removing CPU

- 1) Unlock the cooling fan first.
- 2) Unlock the latch of CPU socket to open position.
- 3) Carefully lifts up the existing CPU to remove it from the actuator.
- 4) Follow the steps of installing a CPU to change to another one or drive latch to close the opened actuator.

Configuring System Bus

WADE-8044 of PGA Type will automatically detect the CPU used. CPU speed of Intel Pentium M / Celeron M can be detected automatically.

3.2 Main Memory

WADE-8044 provides two DIMM socket which support dual channel memory DDR2 400MHz as main memory, Non-ECC (Error Checking and Correcting), non-register functions. The maximum memory size can be up to 2GB capacity.

For system compatibility and stability, do not use memory module without brand. Memory configuration can be either one double-sided DIMM in either one DIMM socket or two single-sided DIMM in both sockets.

Watch out the contact and lock integrity of memory module with socket, it will impact on the system reliability. Follow normal procedures to install memory module into memory socket. Before locking, make sure that all modules have been fully inserted into the card slots.

3.3 Installing the Single Board Computer

To install your WADE-8044 into standard chassis or proprietary environment, please perform the following:

- Step 1: Checking all jumpers setting on proper position
- Step 2: Installing and configure CPU and memory module on right position
- Step 3: Placing WADE-8044 into the dedicated position in the system
- Step 4: Attach cables to existing peripheral devices and secure it

WARNING

Please ensure that SBC is properly inserted and fixed by mechanism.

Note:

Please refer to section 3.3.1 to 3.3.4 to install INF/VGA/LAN/Audio drivers.

3.3.1 Chipset Component Driver

The chipset used on WADE-8044 is relatively new which operating systems might not be able to recognize. To overcome this compatibility issue, for Windows Operating Systems such as Windows-2000/XP, please install its INF before any of other Drivers are installed.

3.3.2 Intel Integrated Graphics GMCH Chip

Using Intel® 910GMLE chipset is the result of new design approach to optimize the shared memory architecture while maintaining the cost benefits of integration through Dynamic Video Memory Technology. With no additional video adaptor, this onboard video provides the system display output.

With no additional video adaptor, this onboard video will usually be the system display output. By adjusting the BIOS setting to disable on-board VGA, an add-on PCI VGA card can take over the system display.

Drivers Support

Please find Alviso GMCH driver in the WADE-8044 CD-title. Drivers support Windows-2000, Windows XP and Linux.

3.3.3 Ethernet Controller

Drivers Support

Please find Realtek 8111B LAN driver in /Ethernet directory of WADE-8044 CD-title. The drivers support Windows-2000 and Windows-XP.

LED Indicator (for LAN status)

WADE-8044 provides two LED indicators to report Realtek 8111B Ethernet interface status. Please refer to the table below as a quick reference guide.

RTL8111B		Color	Name of LED	Operation of Ethernet Port		
				Linked	Active	
Left	Status LED	Green	LAN Linked & Active LED	On	Blinking	
Right	Speed LED	Orange	LAN speed LED	Giga Mbps	100 Mbps	10 Mbps
		Green		Orange	Green	Off

3.3.4 Audio Controller

Please find Realtek ALC262 Audio driver form WADE-8044 CD-title. The drivers support Windows 2000 and XP.

3.4 Clear CMOS Operation

The following table indicates how to enable/disable Clear CMOS Function hardware circuit by putting jumpers at proper position.

JP9	Function
1-2 Short	Clear CMOS contents
Open	Normal Operation ★

To correctly operate CMOS Clear function, user must turn off the system, shorted JP9 jumper both of pin 1 and pin 2. To clear CMOS contents, please turn the power back on and turn it off again for AT system, or press the trigger a few times for ATX system. Removing the jump from JP9 to open and start the system.

3.5 WDT Function

The working algorithm of the WDT function can be simply described as a counting process. The Time-Out Interval can be set through software programming. The availability of the time-out interval settings by software or hardware varies from boards to boards.

WADE-8044 allows users control WDT through dynamic software programming. The WDT starts counting when it is activated. It sends out a signal to system reset or to non-maskable interrupt (NMI), when time-out interval ends. To prevent the time-out interval from running out, a re-trigger signal will need to be sent before the counting reaches its end. This action will restart the counting process. A well-written WDT program should keep the counting process running under normal condition. WDT should never generate a system reset or NMI signal unless the system runs into troubles.

The related Control Registers of WDT are all included in the following sample program that is written in C language. User can fill a non-zero value into the Time-out Value Register to enable/refresh WDT. System will be reset after the Time-out Value to be counted down to zero. Or user can directly fill a zero value into Time-out Value Register to disable WDT immediately. To ensure a successful accessing to the content of desired Control Register, the sequence of following program codes should be step-by-step run again when each register is accessed.

Additionally, there are maximum 2 seconds of counting tolerance that should be considered into user' application program. For more information about WDT, please refer to Winbond W83627DHG-E data sheet.

There are two PNP I/O port addresses that can be used to configure WDT,

- 1) 0x2E: EFIR (Extended Function Index Register, for identifying CR index number)
- 2) 0x2F: EFDR (Extended Function Data Register, for accessing desired CR)

Below are some example codes, which demonstrate the use of WDT.

```
; Entry Super I/O Config
MOV    DX,002Eh    ;01. Setup Super I/O Port 2Eh
MOV    AL,87h      ;02. Setup Entry Key 87h
OUT    DX,AL       ;03. Sent Entry Key Twice
OUT    DX,AL

;-----
; Set Super I/O Pin 77 Function
MOV    AL,02Dh     ;04. Setup Super I/O WDTO pin define
OUT    DX,AL       ;05. Assign Access Register 2Dh
MOV    DX,02Fh     ;06. Assign Data Port(02Fh), read register back
IN     AL,DX        ;07. From Data Port(2Fh) , read register back
AND    AL,0FEh     ;08. Clear bit0 to set Super I/O Pin 77 as WDTO
OUT    DX,AL       ;09. Write value to Super I/O offset 2Dh

;-----
; Switch Logical Device
MOV    DX,02Eh     ;10. Assign setup Index Port to Access Data
MOV    AL,07       ;11. Prepare to change Logical Device
OUT    DX,AL       ;12. Assign Access Register 07h
MOV    AL,08       ;13. Switch to Logical Device 08 to set WDTO function
MOV    DX,02Fh     ;14. Prepare to set value to Data Port
OUT    DX,AL       ;15. Setup value write to Super I/O offset 07H

;-----
; Setting WDTO Function
MOV    AL,030h     ;16. Prepare to enable WDT function
MOV    DX,02Eh     ;17. Assign Setup Index Port , Access Data
OUT    DX,AL       ;18. Assign Setup Access Register 30h
MOV    AL,01       ;19. Setup WDT function to enabled
MOV    DX,02Fh     ;20. Sent Value From Data Port
OUT    DX,AL       ;21. Write Setup Value to Super I/O offset 30h
MOV    AL,0F5h     ;22. Prepare to set register F5h of WDT function
MOV    DX,02Eh     ;23. Access Data From Index Port.
OUT    DX,AL       ;24. Setup Data Access Register At F5H.
MOV    AL,02h      ;25. WDTO Output Low pulse to the KBRST# Pin Enable
MOV    DX,02Fh     ;26. Prepare to set value to Data Port
OUT    DX,AL       ;27. Write Setup Value to register F5h of WDT function
MOV    AL,0F6h     ;28. Prepare to set register F6h of WDT function
MOV    DX,02Eh     ;29. Access Data From Index Port
OUT    DX,AL       ;30. Set value to register F6h of WDT function
MOV    AL,0AAh     ;31. Leave Super I/O Config's Command 0AAh
MOV    DX,02Eh     ;32. Access Data From Index Port
OUT    DX,AL       ;33. Sent 0AAh , Leave From Super I/O Config
```

3.5.1 Pin assignment

J27 : General Purpose I/O Connector

PIN No.	Signal Description	PIN No.	Signal Description
1	GPIO0	2	GPIO4
3	GPIO1	4	GPIO5
5	GPIO2	6	GPIO6
7	GPIO3	8	GPIO7
9	Ground	10	+5V

All General Purpose I/O ports can only apply to standard TTL $\pm 5\%$ signal level (0V/5V), and each source sink capacity up to 12mA.

3.5.2 WADE-8044 GPIO Programming Guide

There are 8 GPIO pins on WADE-8044. These GPIO pins are from Super I/O (W83627DHG-E) and South Bridge (ICH6-M) GPIO pins, and can be programmed as Input or Output direction.

J27 pin header is for 8 GPIO pins and its pin assignment as following :

J27_Pin1=GPIO1:from ICH6M_GPIO33 with Ext. 4.7K PH
 J27_Pin2=GPIO2:from SUPER I/O_GPIO36 with Ext. 4.7K PH
 J27_Pin3=GPIO3:from ICH6M_GPIO34 with Ext. 4.7K PH
 J27_Pin4=GPIO1:from ICH6M_GPIO27 with Ext. 4.7K PH
 J27_Pin5=GPIO3:from SUPER I/O_GPIO21 with Ext. 4.7K PH
 J27_Pin6=GPIO2:from ICH6M_GPIO28 with Ext. 4.7K PH
 J27_Pin7=GPIO7:from SUPER I/O_GPIO20 with Ext. 4.7K PH
 J27_Pin8=GPIO3:from ICH6M_GPIO24 with Ext. 4.7K PH
 <<<<< Be careful Pin9=GND , Pin10=VCC >>>>>

3.5.3 Example1

There are 8 GPIO pins in this board and users can set any GPIO pin as Input or Output. The GPIO Pin SB_GP33 Which SB stands for Source Bridge and GPIO pin W_GP36 which W stands for Super I/O. Below we show how to set GPIO pin as Input/Output.

How to setup GPIO Behavior

Predefine I/O address to configure Super I/O and Source Bridge GPIO pins.

```
#define IOADDRESS    0x2E //Super IO Configuration I/O Port
#define IODATA       0x2F
#define GPIOBASE     0x480 //GPIO base address for Source Bridge
```

Initial SB_GP27 ,where parameter Mode=0 set as Output, Mode=1 set as Input.

```
void InitSB_GPIO27(int Mode)
{
    unsigned char TempData;

    /* Set GPIO27 as GPIO pin */
    TempData = inportb(GPIOBASE+3);
    TempData |= 0x08;
    outportb(GPIOBASE+3, TempData);
    TempData = inportb(GPIOBASE+7);
    switch(Mode)
    {
        case 0: /* output */
            TempData &= ~(0x08); /* bit 27 */
            break;
        case 1: /* input */
            TempData |= 0x08; /* bit 27 */
            break;
    } /* switch(mode) */
    outportb(GPIOBASE+7, TempData);
}
```

Read SB_GP27

```
unsigned char RDSB_GPIO27()
{
    unsigned char TempData;
    TempData = inportb(GPIOBASE+0x0F) & 0x08;
    return TempData;
}
```

Initial SuperIO W_GP20 ,W_GP21

```
void SetPort2(int Mode, unsigned char Data)
{
    unsigned char TempData;

    /* Enter to Extension Mode */
    outportb(IOADDRESS, 0x87);
    outportb(IOADDRESS, 0x87);

    /* Set GP20, GP21 as GPIO */
    outportb(IOADDRESS, 0x29);
    TempData = (inportb(IODATA) | 0x02);
    outportb(IODATA, TempData);

    /* Select Logical Device 9 */
    outportb(IOADDRESS, 0x07);
    outportb(IODATA, 0x09);

    /* Set CR30[0]:1
    Port 2 active */
    outportb(IOADDRESS, 0x30);
    TempData = (inportb(IODATA) | 0x03);
    outportb(IODATA, TempData);

    /* Set CRE3[0:1] : 00
    Set GP20 as output , GP21 as input pin */
    outportb(IOADDRESS, 0xE3);
    switch(Mode)
    {
        case 0:    /* GP20, GP21 AS Output*/
            TempData = (inportb(IODATA) & ~(0x03));
            break;
        case 1:    /* GP20 As Input, GP21 As Output */
            TempData = (inportb(IODATA) | 0x03);
            break;
    }
    outportb(IODATA, TempData);
    outportb(IOADDRESS, 0xE2);
    outportb(IODATA, 0x00); /* not inverse */
    /* Exit Extension Mode */
    outportb(IOADDRESS, 0xAA);
}
```

Read W_GP21

```
unsigned char readSO_21()
{
    unsigned char TempData,ret;

    /* Enter to Extension Mode */
    outportb(IOADDRESS, 0x87);
    outportb(IOADDRESS, 0x87);

    /* Select Logical Device 9 */
    outportb(IOADDRESS, 0x07);
    outportb(IODATA, 0x09);

    outportb(IOADDRESS,0xE4);
    ret = inportb(IODATA)& 0x02;
    /* Exit Extension Mode */
    outportb(IOADDRESS, 0xAA);
    return ret;
}
```

Chapter 4

BIOS Setup Information

WADE-8044 is equipped with the AWARD BIOS stored in SPI Flash ROM. These BIOS has a built-in Setup program that allows users to modify the basic system configuration easily. This type of information is stored in CMOS RAM so that it is retained during power-off periods. When system is turned on, WADE-8044 communicates with peripheral devices and checks its hardware resources against the configuration information stored in the CMOS memory. If any error is detected, or the CMOS parameters need to be initially defined, the diagnostic program will prompt the user to enter the SETUP program. Some errors are significant enough to abort the start-up.

4.1 Entering Setup

Turn on or reboot the computer. When the message "Hit if you want to run SETUP" appears, press key immediately to enter BIOS setup program.

If the message disappears before you respond, but you still wish to enter Setup, please restart the system to try "COLD START" again by turning it OFF and then ON, or touch the "RESET" button. You may also restart from "WARM START" by pressing <Ctrl>, <Alt>, and <Delete> keys simultaneously. If you do not press the keys at the right time and the system will not boot, an error message will be displayed and you will again be asked to,

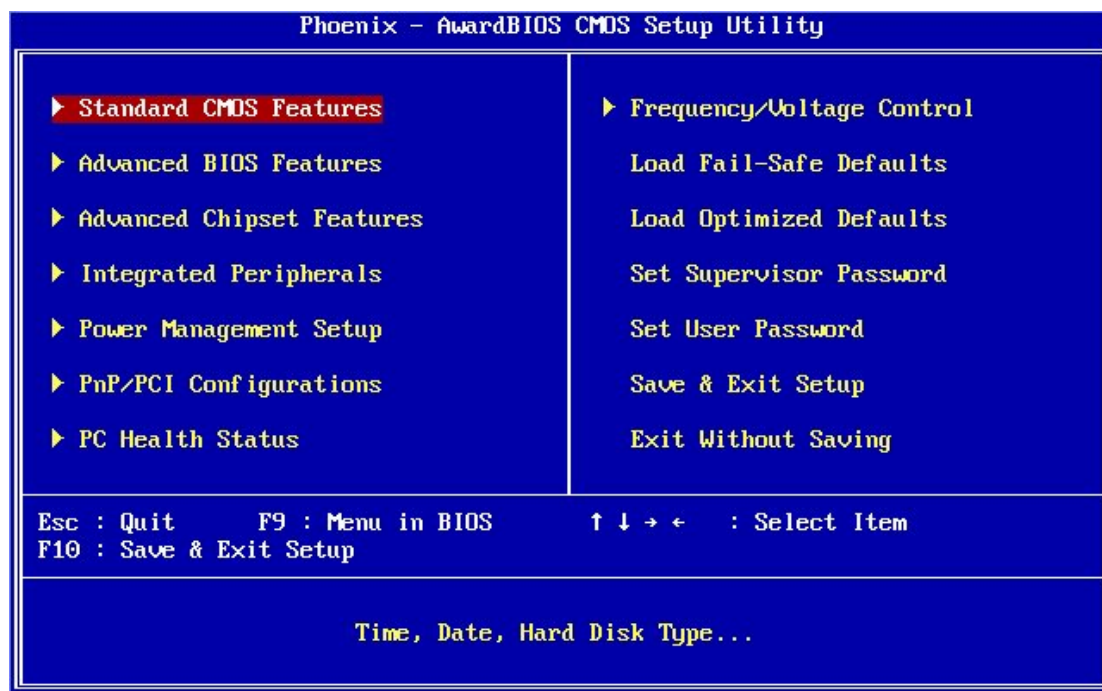
Press <F1> to Run SETUP or Resume

In HIFLEX BIOS setup, you can use the keyboard to choose among options or modify the system parameters to match the options with your system. The table below will show you all of keystroke functions in BIOS setup.

General Help	
↑ ↓ → ←	: Move
Enter	: Select
+ / - /PU /PD	: Value
ESC	: Exit
F1	: General Help
F2	: Item Help
F5	: Previous Values
F6	: Fail-Safe Defaults
F7	: Optimized Defaults
F9	: Menu in BIOS
F10	: Save

4.2 Main Menu

Once you enter WADE-8044 AWARD BIOS CMOS Setup Utility, a Main Menu is presented. The Main Menu allows user to select from eleven setup functions and two exit choices. Use arrow keys to switch among items and press <Enter> key to accept or bring up the sub-menu.

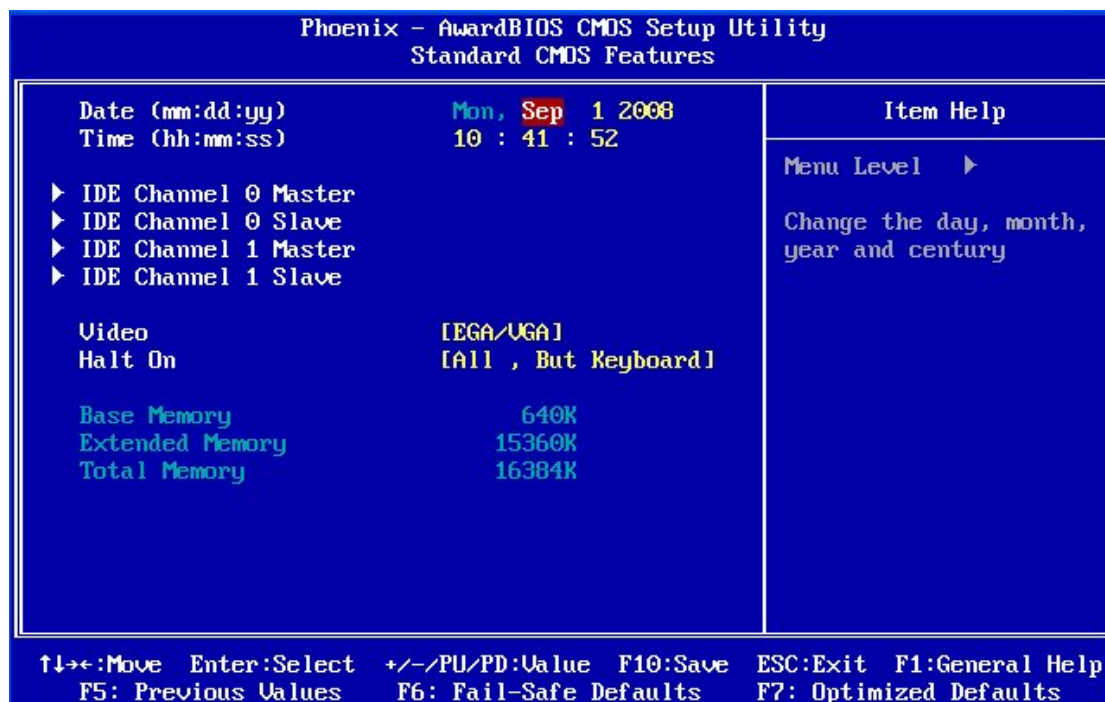
**Note:**

It is strongly recommended to reload Optimum Setting if CMOS is lost or BIOS is updated.

4.3 Standard CMOS Setup Menu

This setup page includes all the items in standard compatible BIOS. Use the arrow keys to highlight the item and then use the <PgUp>/<PgDn> or <+>/<-> keys to select the value or number you want in each item and press <Enter> key to certify it.

Follow command keys in CMOS Setup table to change **Date**, **Time**, **Drive type**, and **Boot Sector Virus Protection Status**.



Note:

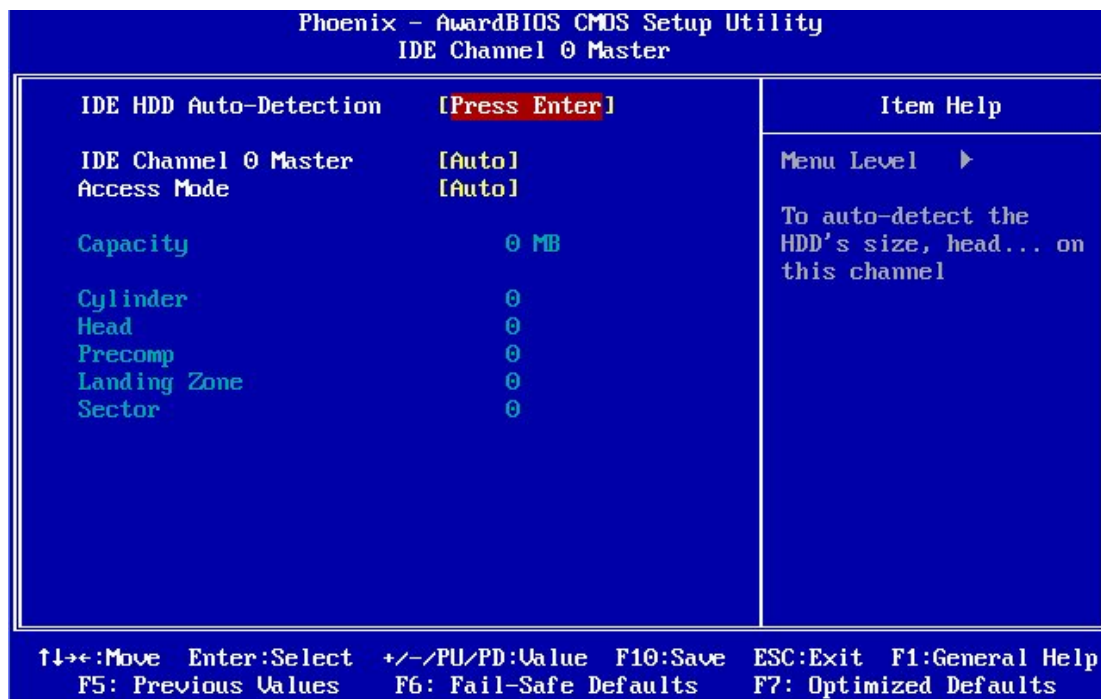
Oblique parameters are base on memory capacity which user adopts on single board.

■ Menu Selections

Item	Options	Description
Date	mm:dd:yy	Change the day, month, year and century
Time	hh:mm:ss	Change the internal clock
IDE Channel 0 Master	Options are in its sub menu (described in Table of section 4.4)	Press <Enter> to enter the sub menu of detailed options
IDE Channel 0 Slave		
IDE Channel 1 Master		
IDE Channel 1 Slave		
Video	EGA/VGA CGA 40 CGA 80 MONO	Select the default video device
Halt On	All Errors No Errors All But Keyboard	All Errors: The boot process will halt on all errors. No Errors: The POST will not stop of any type of error. All But Keyboard: The boot process will stop for any error except a keyboard error.
Base Memory	640K	Displays the amount of conventional memory detected during boot up
Extended Memory	N/A	Displays the amount of extended memory detected during boot up
Total Memory	N/A	Displays the total memory available in the system

4.4 IDE Adaptors Setup Menu

The IDE adaptors control the IDE devices, such as hard disk drive or CD-ROM drive. It uses a separate sub menu to configure each hard disk drive.



Note:

The oblique items are meaning base on what kind of storage device user employs.

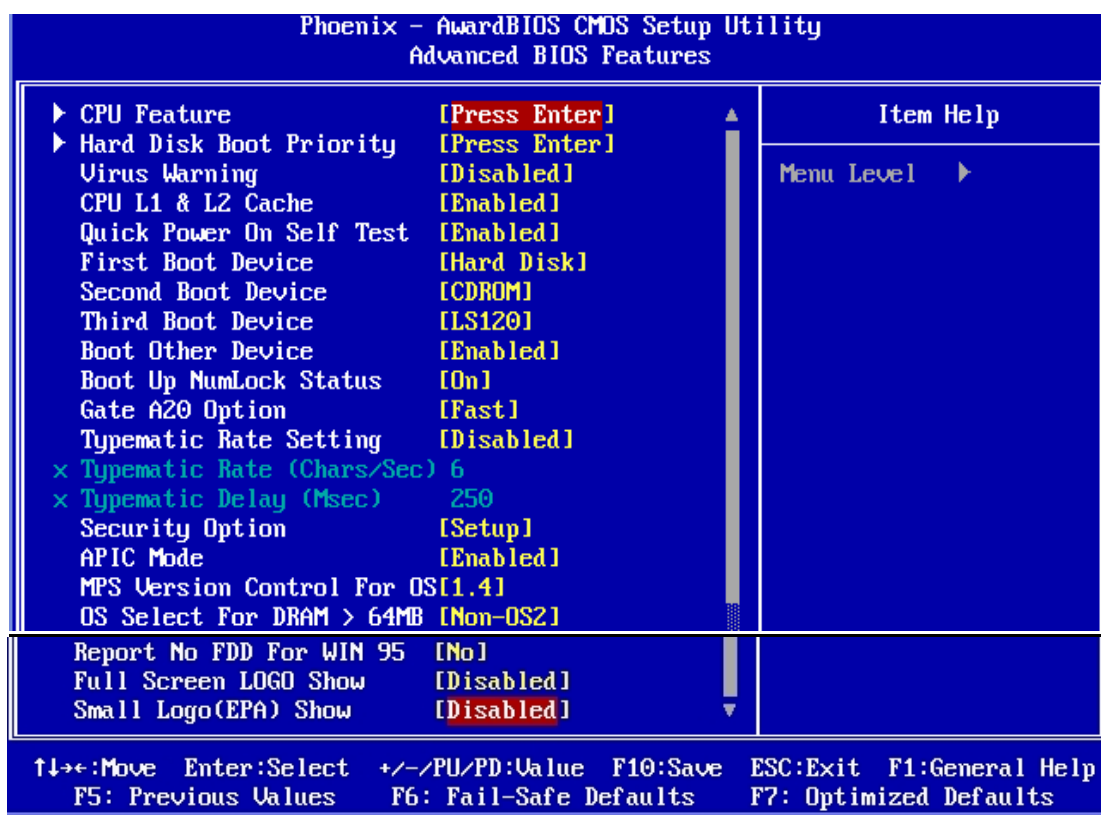
■ Menu Selections

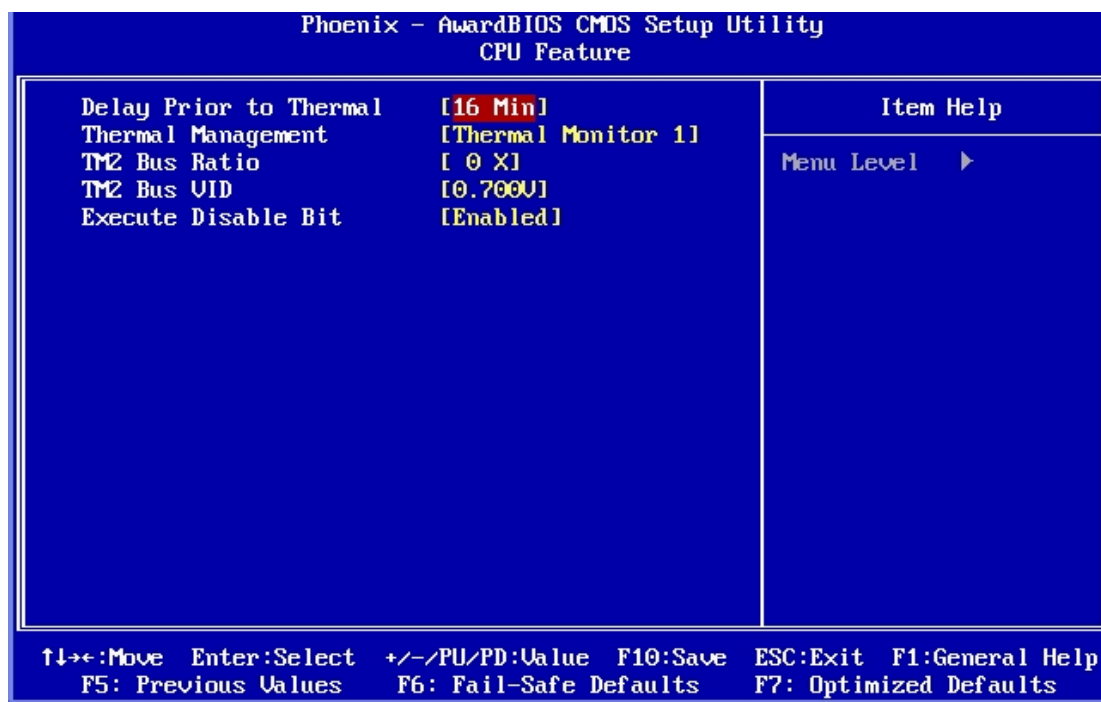
Item	Options	Description
IDE HDD Auto-detection	Press Enter	Press Enter to auto-detect the HDD on this channel. If detection is successful, it fills the remaining fields on this menu.
IDE Channel 0/ Channel 1 Master or Slave	None Auto Manual	Selecting 'manual' lets you set the remaining fields on this screen. Selects the type of fixed disk. "User Type" will let you select the number of cylinders, heads, etc. Note: PRECOMP=65535 means NONE !
Access Mode	CHS, LBA Large, Auto	Choose the access mode for this hard disk
Capacity	Auto Display your disk drive size	Disk drive capacity (Approximated). Note that this size is usually slightly greater than the size of a formatted disk given by a disk checking program.
The following options are selectable only if the 'IDE Primary Master' item is set to 'Manual'		

Cylinder	Min=0, Max=65535	Set the number of cylinders for hard disk
Head	Min=0, Max=255	Set the number of read/write heads
Precomp	Min=0, Max=65535	**** Warning: Setting a value of 65535 means no hard disk
Landing zone	Min=0, Max=65535	****
Sector	Min=0, Max=255	Number of sectors per track

4.5 Advanced BIOS Features

This section allows user to configure your system for basic operation. The system's default speed, boot-up sequence, keyboard operation, shadowing and security may be modified accordingly.





CPU Feature

Press Enter to configure the settings relevant to CPU Feature.

Delay Prior To Thermal

This field is used to select the time that would force the CPU to a 50% duty cycle when it exceeds its maximum operating temperature therefore protecting the CPU and the system board from overheating to ensure a safe computing environment..

Thermal Management

Select a “thermal monitor” in this field to enable the CPU’s speedstep function. Restart the system then go to the operating system’s “Control Panel”. Double-click “Power Options”. The “Power Options Properties” dialog box will appear. In the “Power Schemes” menu, select “Portable/Laptop”. Speedstep reduces the CPU’s frequency and voltage in accordance to its load.

Thermal Monitor 1 On die throttling.

Thermal Monitor 2 Ratio and VID transition.

TM2 Bus Ratio

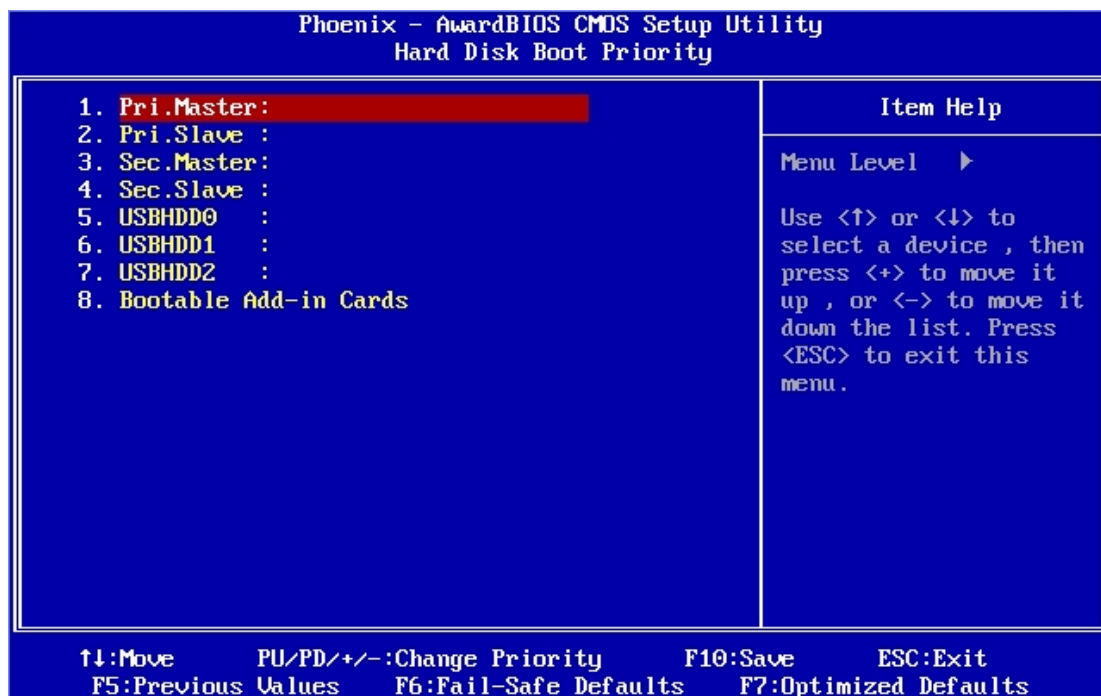
This field is used to select the frequency (bus ratio) of the throttled performance state that will be initiated when the on-die sensor turns from cool to hot.

TM2 Bus VID

This field is used to select the voltage of the throttled performance state that will be initiated when the on-die sensor turns from cool to hot.

Execute Disable Bit

When this field is set to Disabled, it will force the XD feature flag to always return to 0.



Hard Disk Boot Priority

Select boot sequence for onboard(or add-on cards) SCSI, RAID, etc.

Use <↑> or <↓> to select a device, then press<+> to move it up, or <-> to move it down the list.

Press <ESC> to exit this menu.

Virus Warning

Allow you to choose the VIRUS warning feature for IDE Hard Disk boot sector protection. If this function is enabled and someone attempt to write data into this area, BIOS will show a warning message on screen and alarm beep.

Enabled	Activates automatically when the system boots up causing a warning message to appear when anything attempts to access the boot sector or hard disk partition table.
Disabled	No warning message will appear when anything attempts to access the boot sector or hard disk partition table.

CPU L1 & L2 Cache

These two categories speed up memory access. However, it depends on CPU/chipset design.

Enabled	Enable cache
Disabled	Disable cache

Quick Power On Self Test

Allows the system skip certain tests while booting. This will decrease the time needed to boot the system.

Enabled	Enable quick POST
Disabled	Normal POST

First/Second/Third Boot Device

Select your Boot Device Priority.

The choice: Floppy, LS120, Hard Disk, CDROM, ZIP 100, USB-FDD, USB-ZIP, USB-CDROM, LAN and Disabled.

Boot Other Device

Select your Boot Device Priority.

The choice: Enabled, Disabled.

Boot Up NumLock Status

Select power on state for NumLock.

The choice: Off, On.

Gate A20 Option

Fast-lets chipsets control Gate A20 and Normal - a pin in the keyboard controller controls Gate A20. Default is fast.

The choice: Normal, Fast.

Typematic Rate Setting

Keyboard repeat at a rate determined by the keyboard controller, when enabled, the typematic delay can be select.

The choice: Enabled, Disabled.

※Typematic Rate (Chars/sec)

The rate is which character repeats when you hold down a key at.

The choice: 6, 8, 10, 12, 15, 20, 24, and 30. (Default 6)

※Typematic delay (Msec)

The delay before keystrokes begin to repeat.

The choice: 250, 500, 750, and 1000. (Default 250)

Security Option

Select whether the password is required every time the system boots or only when you enter setup.

System	The system will not boot and access to Setup will be denied if the correct password is not entered at the prompt.
Setup	The system will boot, but access to Setup will be denied if the correct password is not entered at the prompt.

Note:

To disable security, select PASSWORD SETTING at Main Menu and then you will be asked to enter password. Do not type anything and just press <Enter>, it will disable security. Once the security is disabled, the system will boot and you can enter Setup freely.

APIC Mode

The choice: Enabled, Disabled.

MPS Version Control For OS

The choice: 1.1, 1.4

OS Select For DRAM > 64MB

Select OS/2 only if you are running OS/2 operating system with greater than 64MB of RAM on the system.

The choice: Non-OS2, OS2.

Report No FDD For WIN 95

This BIOS feature allows you to set if the BIOS should report the absence of a floppy disk drive to Windows 95.

The options are Yes and No.

Full Screen Logo Show

This field is applicable only if you want a particular logo to appear during system boot-up.

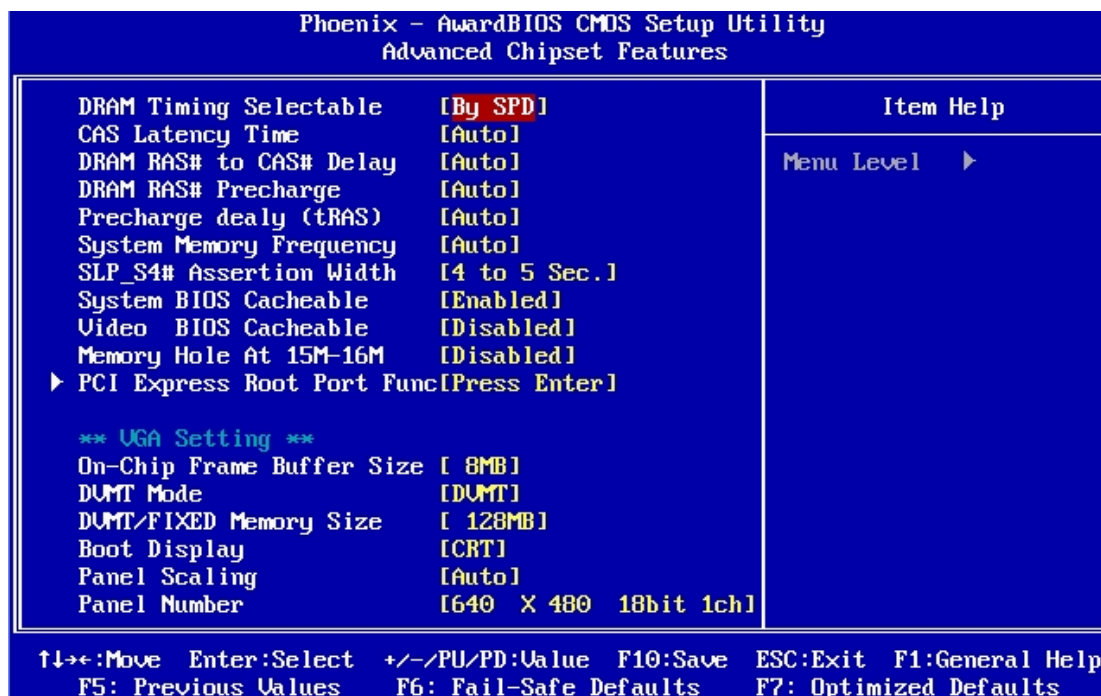
Enabled	The logo will appear in full screen during system boot-up.
Disabled	The logo will not appear during system boot-up.

Small Logo (EPA) Show

Enabled	The EPA logo will appear during system boot-up.
Disabled	The EPA logo will not appear during system boot-up.

4.6 Advanced Chipset Features

This section allows user to configure the system based on the specific features of the Intel 910GMLE and ICH6M chipsets for WADE-8044. This chipset manages bus speeds and access to system memory resources, such as DRAM (DDR2 SDRAM) and the external cache. It must be stated that these items should never need to be altered. The default settings have been chosen because they provide the best operating conditions for the system. The only time user might consider making any changes would be if you discovered that data was being lost while during system operation.



DRAM Timing Selectable

This field is used to select the timing of the DRAM.

The choice: By SPD, Manual.

CAS Latency Time

You can configure CAS latency time in HCLKs as 2 or 2.5 or 3. The system board designer should set the values in this field, depending on the DRAM installed. Do not change the values in this field unless you change specifications of the installed DRAM or the installed CPU.

DRAM RAS# to CAS# Delay

This option allows you to insert a delay between the RAS (Row Address Strobe) and CAS (Column Address Strobe) signals. This delay occurs when the SDRAM is written to, read from or refreshed. Reducing the delay improves the performance of the SDRAM.

DRAM RAS# Precharge

This option sets the number of cycles required for the RAS to accumulate its charge before the SDRAM refreshes.

Precharge Delay (tRAS)

The options are Auto, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14 and 15.

System Memory Frequency

This field is used to select the memory clock speed of the DIMM.

SLP S4# Assertion Width

The options are 1 to 2 Sec., 2 to 3 Sec., 3 to 4 Sec. and 4 to 5 Sec.

System BIOS Cacheable

The choice: Enabled, Disabled.

Video BIOS Cacheable

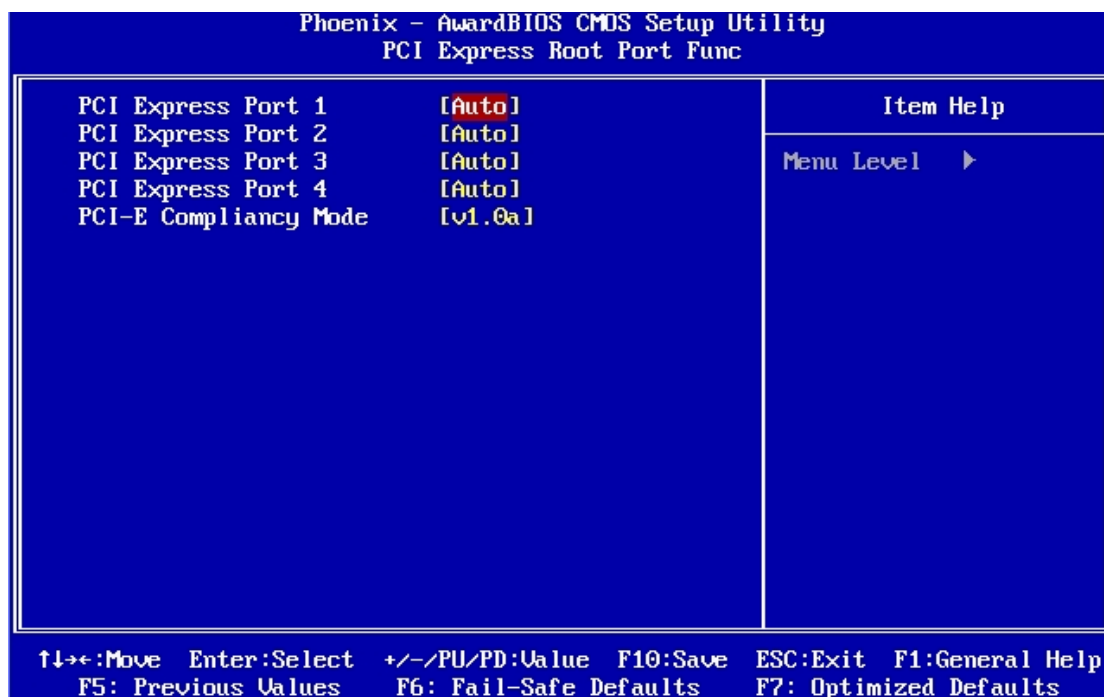
The choice: Enabled, Disabled.

Memory Hole At 15M-16M

The choice: Enabled, Disabled.

PCI Express Root Port Func

Move the cursor to this field and press <Enter>. The following screen will appear.



PCI Express Port 1/2/3/4

This field is used to enable or disable the PCI Express port function.

PCI-E Compliancy Mode

This field is used to select the mode for the PCI Express add-in card.

On Chip Frame Buffer Size

The choice: 1 MB, 8 MB

DVMT Mode

This field shows the current DVMT mode.

When set to Fixed Mode, the graphics driver will reserve a fixed portion of the system memory as graphics memory.

When set to DVMT Mode, the graphics chip will dynamically allocate system memory as graphics memory, according to system and graphics requirements.

When set to Both Mode, the graphics driver will allocate a fixed amount of memory as dedicated graphics memory, as well as allow more system memory to be dynamically allocated between the graphics processor and the operating system.

DVMT/Fixed Memory Size

This field is used to select the graphics memory size used by DVMT/Fixed mode.

Boot Display

The choice: CRT, LFP, CRT+LFP, EFP(DVI), CRT+EFP(DVI), CRT+LFP2.

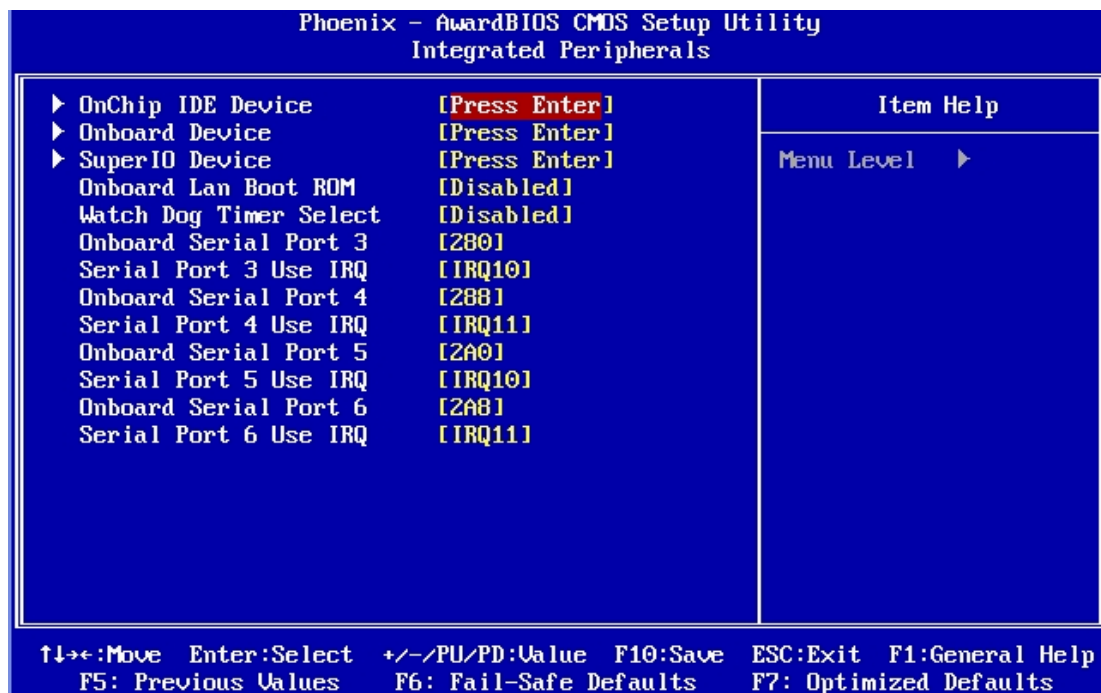
Panel Scaling

The choice: Auto, On, OFF.

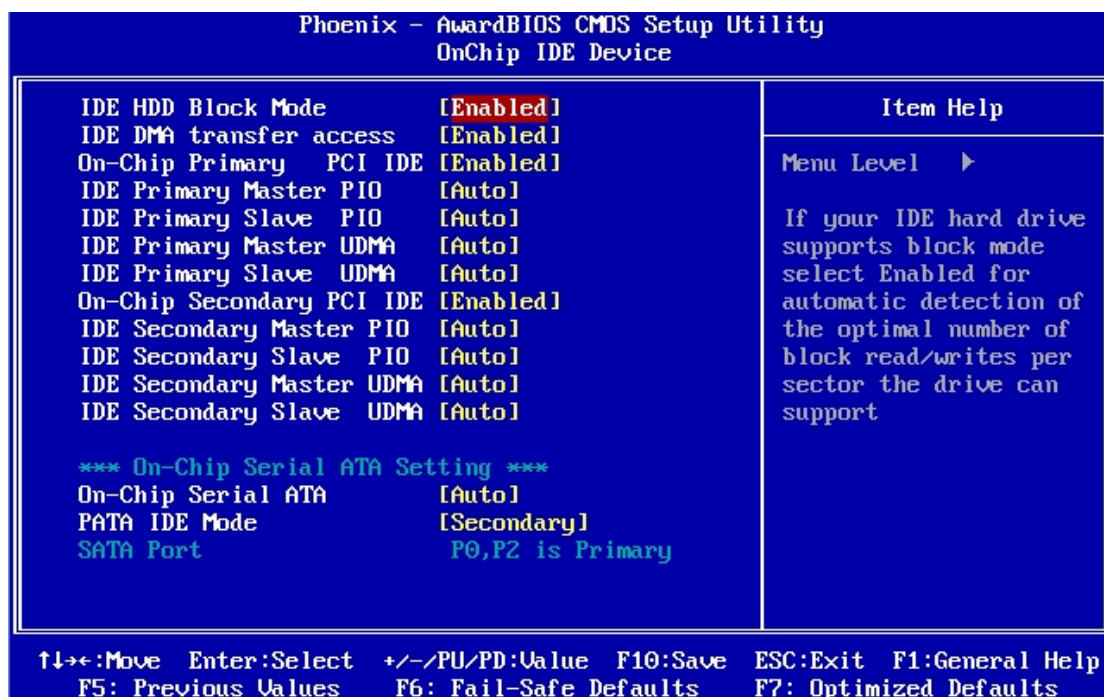
Panel Number

These fields allow you to select the LCD Panel type.

4.7 Integrated Peripherals

**OnChip IDE Device**

Move the cursor to this field and press <Enter>. The following screen will appear.



IDE HDD Block Mode

If IDE hard drive supports block mode select Enabled for automatic detection of the optimal number of block read/writes per sector the drive can support.

The choice: Enabled, Disabled.

IDE DMA Transfer Access

This field, when Enabled, will enhance the IDE DMA transfer of an IDE hard disk drive.

On-Chip Primary/Secondary PCI IDE

The choice: Enabled, Disabled

IDE Primary/Secondary Master/Slave PIO

The four IDE PIO (Programmed Input/Output) fields allow set a PIO mode (0-4) for each of the four IDE devices that the onboard IDE interface supports. Modes 0 through 4 provide successively increased performance. In Auto mode, the system automatically determines the best mode for each device.

The choice: Auto, Mode 0, Mode 1, Mode 2, Mode 3, Mode 4.

IDE Primary/Secondary Master/Slave UDMA

Ultra DMA/33/66/100 implementation is possible only if IDE hard drive supports and the operating environment includes a DMA driver (Windows 95 OSR2 or a third-party IDE bus master driver). If your hard drive and system software both support Ultra DMA/33/66/100, select Auto to enable BIOS support.

The choice: Auto, Disabled.

On-Chip Serial ATA

Disabled	Disables the onboard SATA.
Auto	The system will detect the existing SATA and IDE drives then automatically set them to the available master/slave mode.
Combined Mode	This option allows you to use both IDE and SATA drives; allowing a maximum of 4 drives 1 IDE Master, 1 IDE Slave and 2 SATA; supporting maximum of 2 drives on each channel.
Enhanced Mode	This option allows you to use both IDE and SATA drives; allowing a maximum of 4 drives 1 IDE Master, 1 IDE Slave and 2 SATA.
SATA Only	This option automatically sets the SATA drives to Primary Master mode. Since the SATA drives are in Master mode, you cannot set the IDE drive to Master mode.

PATA IDE Mode

This field is used to select the function mode of the IDE connector.

Secondary	Slave channel. SATA 1 and SATA 2 serve as Primary Master and Primary Slave channel.
-----------	-------------------------------------------------------------------------------------

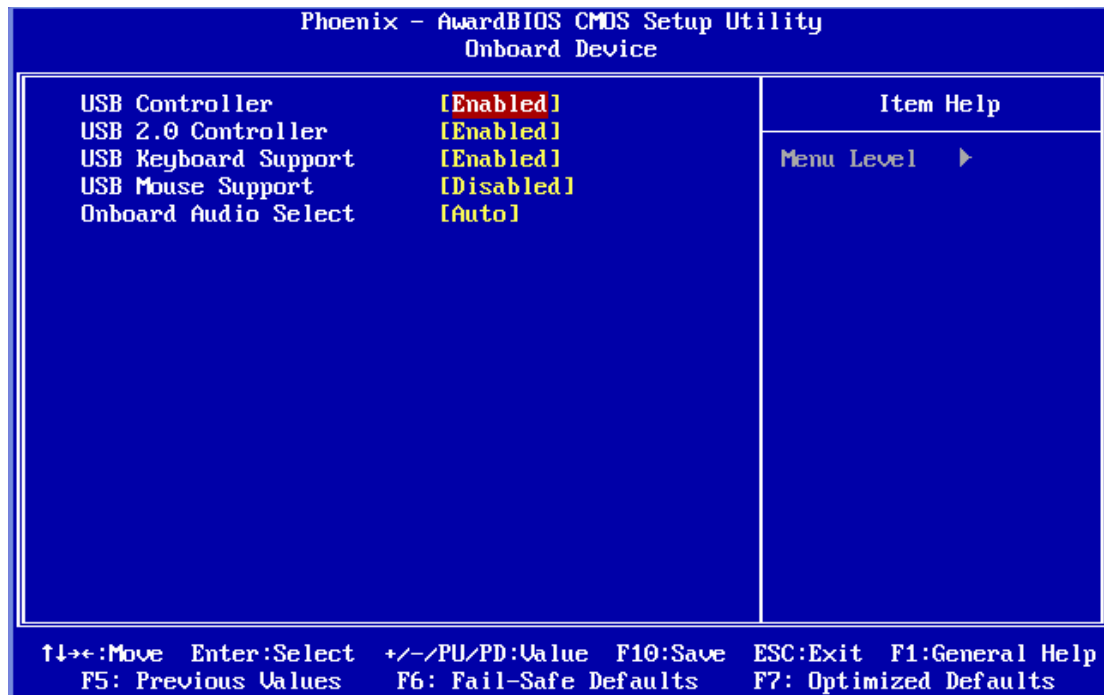
SATA Port

If the "PATA IDE Mode" field is set to Primary, this field will show "P1, P3 is Secondary"; meaning SATA 0 and SATA 2 are Secondary.

If the "PATA IDE Mode" field is set to Secondary, this field will show "P0, P2 is Primary"; meaning SATA 1 and SATA 3 are Primary.

Onboard Device

Move the cursor to this field and press <Enter>. The following screen will appear.



USB and USB 2.0 Controller

[Enabled] or [Disabled] universal host controller interface for universal serial bus.

The choice: Enabled, Disabled.

USB Keyboard/Mouse Support

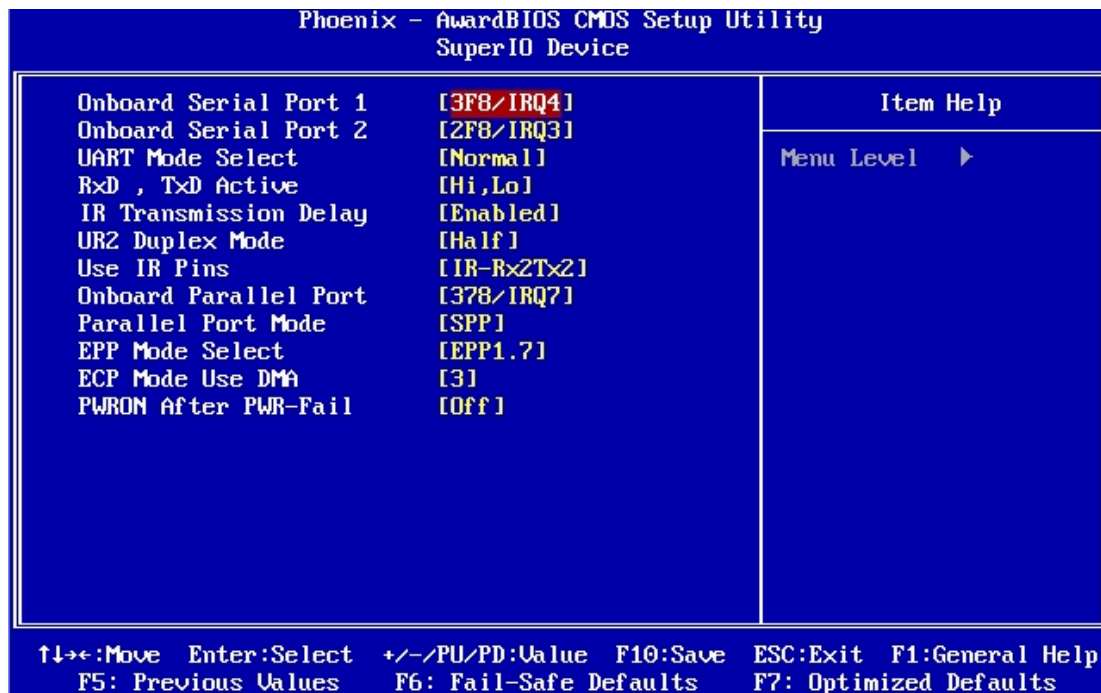
Legacy support of USB keyboard or mouse.

The choice: Disabled, Enabled.

Onboard Audio Select

Auto	Select this option when using the onboard audio CODEC.
Disabled	Select this option when using a PCI sound card.

Super IO Device Setting



Onboard Serial Port 1 and Onboard Serial Port 2

Auto The system will automatically select an I/O address for the onboard serial port 1 and serial port 2.

3F8/IRQ4, 2F8/IRQ3, 3E8/IRQ4, 2E8/IRQ3
 Allows you to manually select an I/O address for the onboard serial port 1 and serial port 2.

Disabled Disables the onboard serial port 1 and/or serial port 2.

Onboard Parallel Port

378/IRQ7, 3BC/IRQ7, 278/IRQ5 Selects the I/O address and IRQ for the onboard parallel port.

Disabled Disables the onboard parallel port.

Parallel Port Mode

The choice: SPP, EPP, ECP, ECP+EPP, Normal.

EPP Mode Select

This field is used to select the EPP mode.

ECP Mode Use DMA

This is used to select a DMA channel of the parallel port.

PWRON After PWR-Fail

This item allows user to configure the power status of using ATX power supply after a serious power loss occurs.

On	System automatically restores Power back
Off	System stays at Power-Off
Former-Sts	System power on depends on the states before AC lost

OnBoard LAN Boot ROM

This function decide whether to invoke the boot ROM of the onboard LAN chip.

Enabled Enable this function.
Disabled Disable this function. (Default value)

Watch Dog Timer Select

The choice: Disabled, 10/20/30/40 sec, 1/2/4 Min.

Onboard Serial Port 3/4/5/6

Allows you to manually select an I/O address for the onboard serial port 3/4/5/6

The choice: 280/288/2A0/2A8

※Onboard Serial Port 5 and 6 are optional

Serial Port 3/4/5/6 Use IRQ

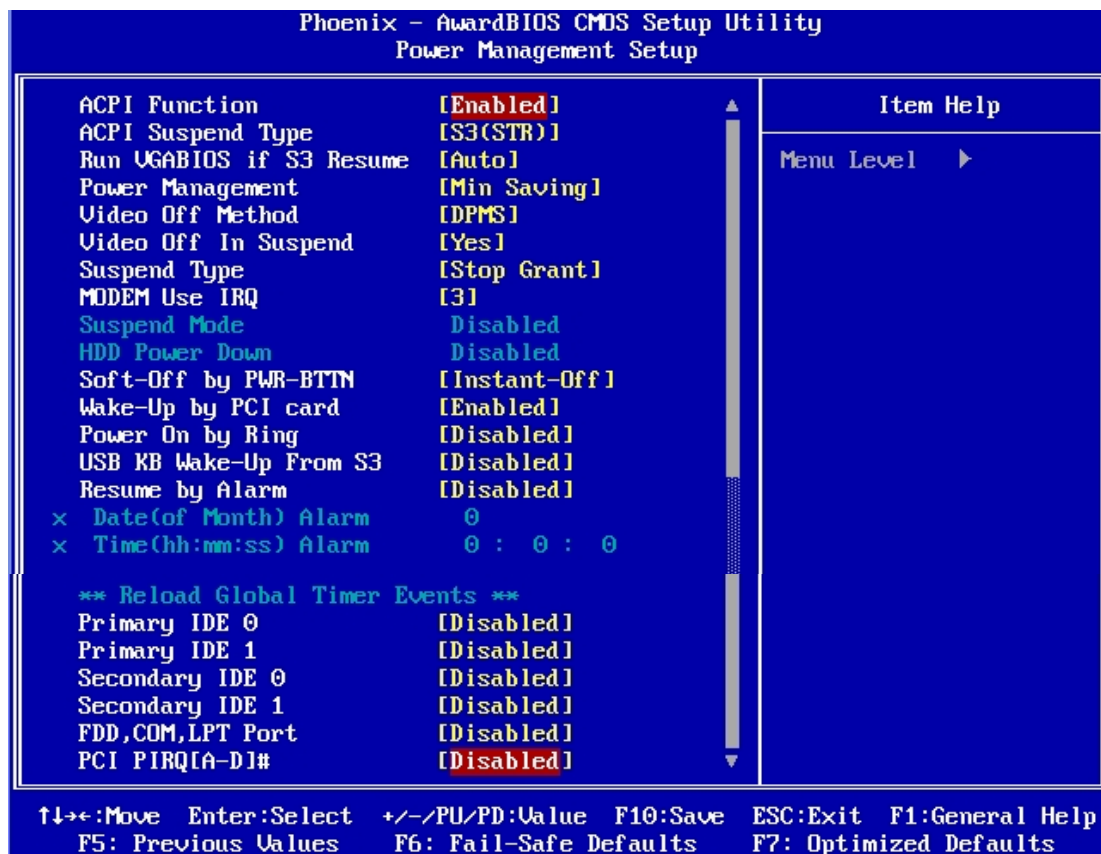
Allows you to manually select an IRQ for the onboard serial port 3/4/5/6

The choice: IRQ 3 / IRQ 4 / IRQ 10 / IRQ 11

※Onboard Serial Port 5 and 6 are optional

4.8 Power Management Setup

The Power Management Setup allows configuration of the system to most effectively save energy while operating in a manner consistent with your own style of computer use.



ACPI Function

This item allows you to enable/disable the Advanced Configuration and Power Management (ACPI).

The choice: Enabled, Disabled.

ACPI Suspend Type

To decide which ACPI suspend mode to use.

The choice: S1(TOS)/S3 (STR) .

※Run VGA BIOS if S3 Resume

The choice: Auto, Yes, No.

Power Management

This category allows selecting the type (or degree) of power saving and is directly related to "HDD Power Down", "Suspend Mode".

There are three selections for Power Management, three of which have fixed mode settings.

Min. Power Saving	Minimum power management. Suspend Mode = 1 Hour, and HDD Power Down = 15 Min.
Max. Power Saving	Maximum power management. Suspend Mode = 1 Min., and HDD Power Down = 1 Min.
User Defined	Allows you to set each mode individually. When not disabled, Suspend Mode ranges from 1 min. to 1 Hour and HDD Power Down ranges from 1 Min. to 15 Min.

Video off Method

This determines the manner in which the monitor is blanked.

V/H SYNC+Blank	This selection will cause the system to turn off the vertical and horizontal synchronization ports and write blanks to the video buffer.
Blank Screen	This option only writes blanks to the video buffer.
DPMS	Initial display power management signaling.

Video Off In Suspend

This allows user to enable/disable video off in Suspend Mode.

The choice: Yes, No.

Suspend Type

Two options are available : Stop Grant and PWROn Suspend.

The choice: Stop Grant, PWROn Suspend.

Modem Use IRQ

This field sets the IRQ used by the Modem. By default, the setting is 3.

Suspend Mode

When enabled and after the set time of system inactivity, all devices except the CPU will be shut off.

The choice: Disabled, 1 Min, 2 Min, 4 Min, 8 Min, 12 Min, 20 Min, 30 Min, 40 Min, 1 Hour.

HDD Power Down

When enabled and after the set time of system inactivity, the hard disk drive will be powered down while all other devices remain active.

The choice: Disabled, 1 Min, 2 Min, 3 Min, 4 Min, 5 Min, 6 Min, 7 Min, 8 Min, 9 Min, 10 Min, 11 Min, 12 Min, 13 Min, 14 Min, 15 Min.

Soft-Off by PWR-BTTN

This item allows users to set the time to remove the power after the power button is pressed.

The choice: Instant-Off, Delay 4 Sec.

Wake up by PCI Card

The choice: Enable, Disabled.

Power On by Ring

When select "Enabled", a system that is at soft-off mode will be alert to Wake-On-Modem or Wake-On LAN.

The choice: Enabled, Disabled.

※USB KB Wake-Up From S3

The choice: Enabled, Disabled. (Default Disabled)

Resume by Alarm

This item allows users to enable/disable the resume by alarm function. When "Enabled" is selected, system using ATX power supply could be powered on if a customized time and day is approached.

The choice: Enabled, Disabled.

※Date(of Month) Alarm

When "Resume by Alarm" is enabled, this item could allow users to configure the date parameter of the timing dateline on which to power on the system.

The choice: 0 ~ 31.

※Time (hh:mm:ss) Alarm

When “Resume by Alarm” is enabled, this item could allow users to configure the time parameter of the timing dateline on which to power on the system.

The choice: hh (0~23), mm (0~59), ss (0 ~59).

Primary/Secondary IDE 0/1

This item is to configure IDE devices being monitored by system so as to keep system out of suspend mode if the associated device is busy.

The choice: Enabled, Disabled.

FDD, COM, LPT Port

This item is to configure floppy device, COM ports, and parallel port being monitored by system so as to keep system out of suspend mode if the associated device is busy.

The choice: Enabled, Disabled.

PCI PIQ[A-D]#

This option can be used to detect PCI device activities. If they are activities, the system will go into sleep mode.

The choice: Enabled, Disabled.

4.9 PnP/PCI Configurations

This section describes configuring the PCI bus system. PCI, or **P**eripheral **C**omputer **I**nterconnect, is a system which allows I/O devices to operate at speeds nearing the speed the CPU itself uses when communicating with its own special components.

This section covers some very technical items and it is strongly recommended that only experienced users should make any changes to the default settings

Phoenix - AwardBIOS CMOS Setup Utility		
PnP/PCI Configurations		
Init Display First	[PCI Slot]	Item Help Menu Level ▶
Reset Configuration Data	[Disabled]	
Resources Controlled By	[Auto(ESCD)]	
x IRQ Resources	Press Enter	
PCI/VGA Palette Snoop	[Disabled]	

↑↓→←:Move	Enter:Select	+/-/PU/PD:Value	F10:Save	ESC:Exit	F1:General Help
F5: Previous Values	F6: Fail-Safe Defaults	F7: Optimized Defaults			

Init Display First

This field is used to select whether to initialize the onboard VGA, PCI Express or PCI first when the system boots.

Reset Configuration Data

Default is disabled. Select Enabled to reset Extended System Configuration Data (ESCD) when you exit Setup if you have installed a new add-on and the system reconfiguration has caused such a serious conflict that the OS cannot boot.

The choice: Enabled, Disabled.

Resource Controlled By

BIOS can automatically configure the entire boot and plug and play compatible devices. If set to Auto, IRQ DMA and memory base address fields can not be selected, since BIOS automatically assigns them.

The choice: Auto (ESCD), Manual.

※IRQ Resources

When resources are controlled manually, assign each system interrupt a type, depending on the type of device using the interrupt.

The choice: Press Enter.

IRQ-3/IRQ-4/IRQ-5/IRQ-7/IRQ-9/IRQ-10/IRQ-11/IRQ-12/IRQ-14/IRQ-15 assigned to.

The choice: PCI/ISA PnP, Legacy ISA.

※DMA Resources

When resources are controlled manually, assign each system interrupt a type, depending on the type of device using the DMA Resource.

The choice: Press Enter.

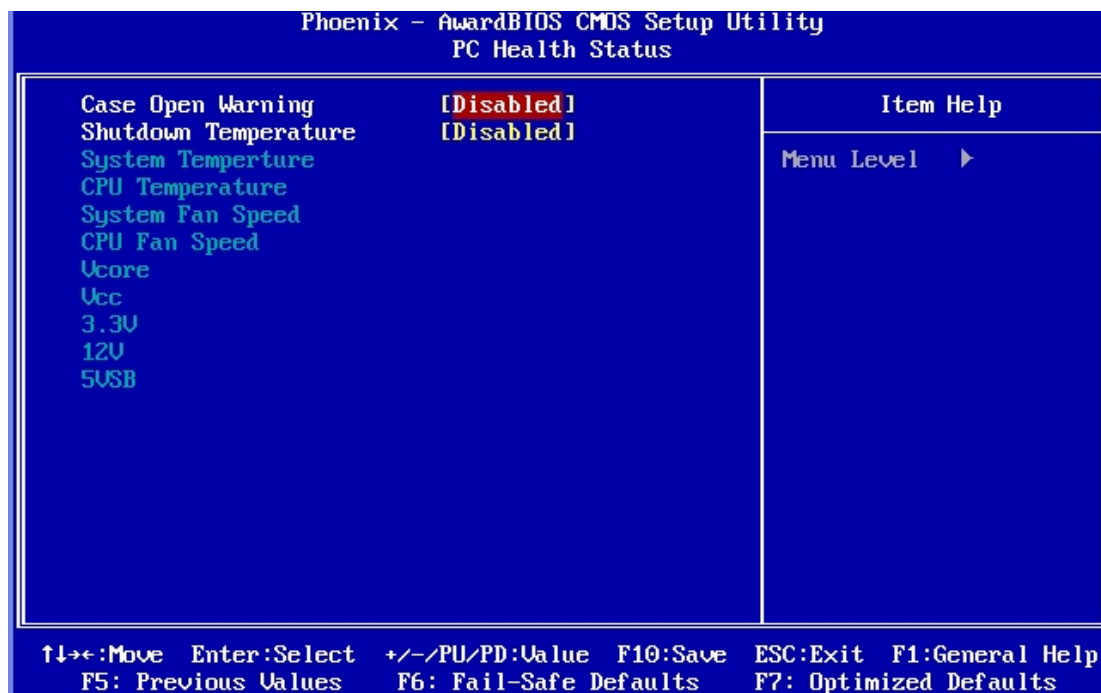
DMA-0/DMA-1/DMA-2/DMA-3/DMA-4/DMA-5/DMA-6/DMA-7 assigned to.

The choice: PCI/ISA PnP, Legacy ISA.

PCI/VGA Palette Snoop

This field determines whether the MPEG ISA/VESA VGA cards can work with PCI/VGA or not. The default value is Disabled.

4.10 PC Health Status



Note:

The oblique items are variable parameters which are base on power resource.

Case Open Warning

This Item cause for the Warning message And Beep is that the chassis was opened

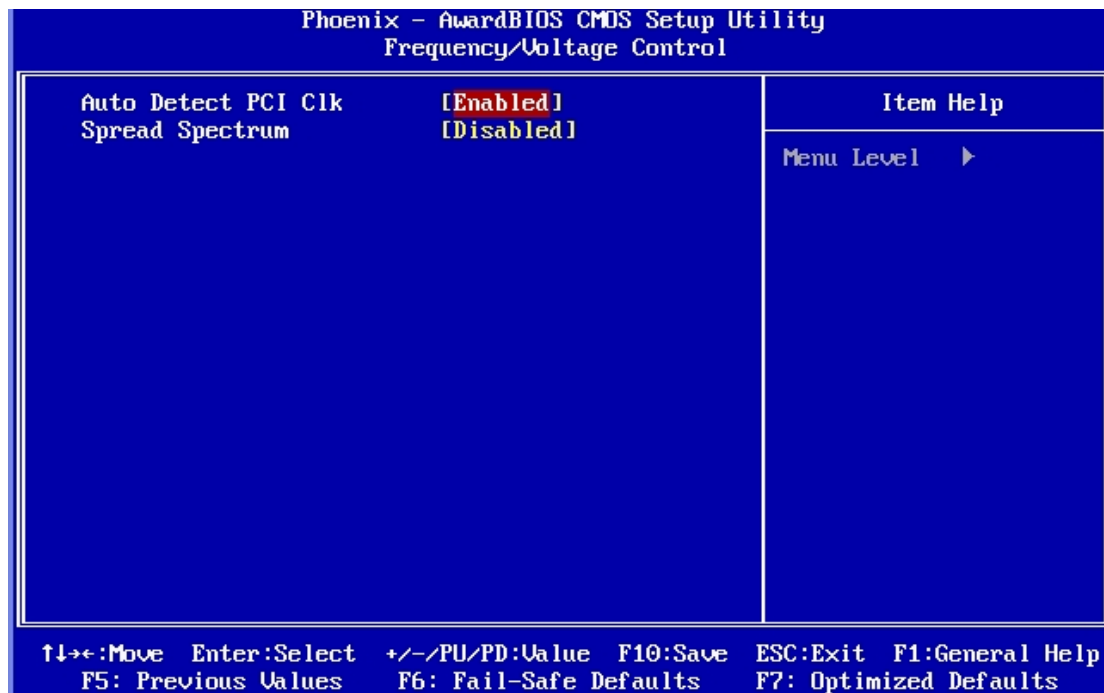
The choice: Enabled, Disabled.

Shutdown Temperature

You can prevent the system from overheating by selecting a temperature in this field. If the system detected that its temperature exceeded the one set in this field, it will automatically shutdown.

※Please note that this function only work under ACPI enabled OS.

4.11 Frequency/Voltage Control



Auto Detect PCI Clk

The choice: Enabled, Disabled.

Spread Spectrum

This item allows user to enable/disable the spread spectrum modulate.

The choice: Enabled, Disabled.

4.12 Default Menu

Selecting “Defaults” from the main menu shows two options which are described below,

Load Fail-Safe Defaults

When <Enter> is pressed, a confirmation dialog box with a message similar to:

Load Fail-Safe Defaults (Y/N) ? **N**

Pressing ‘Y’ loads the BIOS default values for the most stable, minimal-performance system operations.

Load Optimized Defaults

When <Enter> is pressed, a confirmation dialog box with a message similar to:

Load Optimized Defaults (Y/N) ? **N**

Pressing ‘Y’ loads the default values that are factory settings for optimal performance system operations.

4.13 Supervisor/User Password Setting

Either supervisor or user password can be setup, or both of them. The differences between are:

Set Supervisor Password: can enter and change the options of the setup menus.

Set User Password: just can only enter but do not have the right to change the options of the setup menus. When selecting this function, the following message will appear at the center of the screen to assist you in creating a password.

ENTER PASSWORD

Type the password, up to eight characters in length, and press <Enter>. The password typed now will clear any previously entered password from CMOS memory. You will be asked to confirm the password. Type the password again and press <Enter>. You may also press <Esc> to abort the selection and not enter a password.

To disable a password, just press <Enter> when prompted to enter the password. A message will confirm the password will be disabled. Once the password is disabled, the system will reboot and Setup can be entered freely.

PASSWORD DISABLED

When a password has been enabled, user will be prompted to enter it every time user tries to enter Setup. This prevents an unauthorized person from changing any part of your system configuration.

Additionally, when a password is enabled, you can also require the BIOS to request a password every time your system is rebooted. This would prevent unauthorized use of the computer.

User may determine when the password is required within the BIOS Features Setup Menu and its Security option (see Section 3). If the Security option is set to "System", the password will be required both at boot and at entry to Setup. If set to "Setup", prompting only occurs when trying to enter Setup.

4.14 Exiting Selection

Save & Exit Setup

Pressing <Enter> on this item asks for confirmation:

Save to CMOS and EXIT (Y/N)? **Y**

Pressing "Y" stores the selections made in the menus in CMOS – a special section of memory that stays on after system off. During subsequent booting of computer, the BIOS configures the system according to the Setup selections stored in CMOS. After saving the values the system is restarted again.

Exit Without Saving

Pressing <Enter> on this item asks for confirmation:

Quit Without Saving (Y/N)? **N**

This allows user to exit Setup without storing in CMOS any change. The previous selections remain in effect. This exits the Setup utility and restarts your computer.

Chapter 5

Troubleshooting

This chapter provides a few useful tips to quickly get WADE-8044 running with success. As basic hardware installation has been addressed in Chapter 2, this chapter will primarily focus on system integration issues, in terms of BIOS setting, and OS diagnostics.

5.1 Hardware Quick Installation

Intel Socket 479 Pentium M / Celeron M processor

Please kindly refer the figure 3-1 at chapter 3, user has to configure CPU into the actuator more gentle and locks the latch on the actuator, don't forcible push CPU into socket.

5.2 BIOS Setting

It is assumed that users have correctly adopted modules and connected all the devices cables required before turning on ATX power. CPU, CPU Fan, 240-pin DDR2 SDRAM, keyboard, mouse, floppy drive, IDE hard disk, VGA connector, device cables, ATX power cable are good examples that deserve attention. With no assurance of properly and correctly accommodating these modules and devices, it is very possible to encounter system failures that result in malfunction of any device.

To make sure that you have a successful start with WADE-8044, it is recommended, when going with the boot-up sequence, to hit "DEL" key and enter the BIOS setup menu to tune up a stable BIOS configuration so that you can wake up your system far well.

Loading the default optimal setting

When prompted with the main setup menu, please scroll down to "**Load Optimal Defaults**", press "Enter" and "Y" to load in default optimal BIOS setup. This will force your BIOS setting back to the initial factory configuration. It is recommended to do this so you can be sure the system is running with optimized BIOS setting. As a matter of fact, users can load the default BIOS setting any time when system appears to be unstable in boot up sequence.

Auto Detect Hard Disks

In the BIOS => Standard CMOS setup menu, pick up any one from Primary/Secondary Master/Slave IDE ports, and press "Enter". Setup the selected IDE port and its access mode to "Auto". This will force system to automatically pick up the IDE devices that are being connected each time system boots up.

Improper disable operation

There are too many occasions where users disable a certain device/feature in one application through BIOS setting. These variables may not be set back to the original values when needed. These devices/features will certainly fail to be detected.

When the above conditions happen, it is strongly recommended to check the BIOS settings. Make sure certain items are set as they should be. These include the COM1/COM2/COM3/COM4 ports, USB ports, external cache, on-board VGA and Ethernet.

It is also very common that users would like to disable a certain device/port to release IRQ resource. A few good examples are

Disable COM1/COM4 serial port to release IRQ #4

Disable COM2/COM3 serial port to release IRQ #3

Etc...

A quick review of the basic IRQ mapping is given below for your reference.

IRQ#	Description
IRQ #0	System timer
IRQ #1	Keyboard
IRQ #2	cascade
IRQ #3	COM2
IRQ #4	COM1
IRQ #5	PCI device
IRQ #6	PCI device
IRQ #7	Possibility used by LPT1
IRQ #8	RTC clock
IRQ #9	PCI device
IRQ #10	COM3
IRQ #11	COM4
IRQ #12	Mouse
IRQ #13	Mathprocessor : 686
IRQ #14	Fixed disk
IRQ #15	Probably not available

It is then very easy to find out which IRQ resource is ready for additional peripherals. If IRQ resource is not enough, please disable some devices listed above to release further IRQ numbers.

5.3 FAQ

Symptom: SBC keeps beeping, and no screen has shown.

Solution: In fact, each beep sound represents different definition of error message.
Please refer to table as following:

Beep sounds	Meaning	Action
One long beep with one short beeps	DRAM error	Change DRAM or reinstall it
One long beep constantly	DRAM error	Change DRAM or reinstall it
One long beep with two short beeps	Monitor or Display Card error	Please check Monitor connector whether it inserts properly
Beep rapidly	Power error warning	Please check Power mode setting

Information & Support

Question:Why cannot I install USB 2.0 driver?

Answer: If you are using Windows 2000, you need to update your Service-Pack version to Service-Pack 4. If you are using Windows XP, you need to update Service-Pack to Service Pack 1 at least.

Question:I forget my password of system BIOS, what am I supposed to do?

Answer: You can simply short 1-2 pins on JP9 to clean your password.

System Memory Address Map

Each On-board device in the system is assigned a set of memory addresses, which also can be identical of the device. The following table lists the system memory address used for your reference.

Memory Area	Size	Device Description
0000 - 003F	1K	Interrupt Area
0040 - 004F	0.3K	BIOS Data area
0050 - 006F	0.5K	System Data
0070 - 0BE3	45K	DOS
0BE4 - 0E1B	8.9K	Program Area
0E1C - 9E26	576K	Available
9E27 - 9FBF	6.4K	Program Area
= Conventional memory ends at 640K =		
9FC0 - 9FFF	1K	Extended Bios Area
A000-AFFF	64 K	VGA Graphics
B000 - B7FF	32 K	Unused
B800 - BFFF	32 K	VGA Text
C000 - CFFF	64 K	Video ROM
D000 - DFFF	64 K	Unused
E000 -FFFF	128 K	System ROM
HMA	64 K	First 64K extended

Interrupt Request Lines (IRQ)

Peripheral devices can use interrupt request lines to notify CPU for the service required. The following table shows the IRQ used by the devices on board.

IRQ#	Current Use	Default Use
IRQ 0	System ROM	System timer
IRQ 1	System ROM	Keyboard
IRQ 2	[Unassigned]	Cascade
IRQ 3	System ROM	COM2
IRQ 4	System ROM	COM1
IRQ 5	[Unassigned]	PCI device
IRQ 6	System ROM	PCI device
IRQ 7	[Unassigned]	Possibility used by LPT1
IRQ 8	System ROM	RTC clock
IRQ 9	[Unassigned]	PCI device
IRQ 10	[Unassigned]	COM3
IRQ 11	[Unassigned]	COM4
IRQ 12	System ROM	Mouse
IRQ 13	System ROM	Mathprocessor:686
IRQ 14	System ROM	Fixed disk
IRQ 15	[Unassigned]	Probably not available